



# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M D Editor

Business and Editorial Offices 17 West 43d Street New York U S A

Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N Y U S A

## COMMITTEE ON PUBLICATION

S W S Tom M D Chairman Nyack Edward L Hunt M D New York John C Mac Evitt M D Brooklyn  
Martin B Tinker M D Ithaca Frank Van Fleet M D New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in this Journal

Vol XVIII

JANUARY, 1918

No 1

## ORIGINAL ARTICLES

### THE MECHANISM OF INTESTINAL ATONY IN CHILDREN—ETIOLOGY AND TREATMENT

By FENTON B TURCK, M D  
NEW YORK CITY

**T**WENTY-FIVE years of experimental and clinical study of intestinal atony in both adults and children serves to confirm the fact so frequently pointed out by pediatricians that though the adult and the child may suffer from the same disease there are always certain essential differences in the manner in which the infantile organism reacts. While the mechanism of intestinal atony in children is initiated by the same causes and follows a similar series of events in the establishment of a vicious circle, as I have frequently described in the adult, there are certain predisposing factors which make the child more susceptible than the adult to gastrointestinal disturbances. In the discussion of our subject we will endeavor to emphasize these differences.

The etiology of intestinal atony in children must be viewed, as we are coming more and more to view all the problems of medicine, from the standpoint of the dynamics of life. We must recognize the role of the physics of colloids in biology,<sup>1</sup> which has created a new concept of normal and abnormal function. We must remember that the lumen of the intestine acts as a membrane filter for colloids and at the same

time is itself colloid in character, it determines the rate of diffusion of the colloid suspensions that filter through it. For instance, a transparent colloid, as a boiled starch mixture forming a jelly-like fluid containing finely diffused particles may pass easily through a filter as though it were a true solution. The fluids of the body that diffuse through the tissues have much the same properties. With this conception as the basis of our investigation we find that in the production of intestinal atony there are a number of factors involved as (1) Increased permeability of the gastrointestinal tract, (2) agencies which are responsible for this increased permeability, (3) a previous sensitization of the muscle cells, rendering them susceptible to anaphylactic reaction, (4) fatigue, and (5) tension. Other pathological states also exert an influence.

Writing on the toxicity of egg albumen fed to white rats, F Maignon (*Jour Chemical Abstracts* Vol 10, No 22, November 20, 1916) describes his experiments on white rats fed on egg albumen with the addition of mineral salts. Those fed in this way during the winter died in about three weeks with the loss of more than 40 per cent of their body weight, similar experiments in the spring and summer resulted in the death of the animals in three or four days with a loss of only 20 or 22 per cent of their body weight. These animals appeared to have died of nitrogen intoxication. We have here interesting confirmation of the toxic influence of certain colloids on the intestinal mucosa.

## DIFFUSION OF BACTERIA

My earlier experiments<sup>2, 3</sup> on animals which I have elsewhere presented in detail have shown very conclusively that the lumen of the intestinal tract is permeable to bacteria and other colloid emulsions, as white of egg or other protein particles, and that their passage is determined by certain laws of physics not as yet thoroughly understood. The passage of bacteria and other proteins has been shown to be definitely affected by changes in the splanchnic circulation, over-feeding, fatigue, shock, tension, etc.

For my study of the diffusion routes of bacteria I selected the fetal pig, because in the fetal animal the intestinal tract is sterile and we may be sure that the bacteria whose course we follow are those which we have introduced. Without going into these experiments in detail, I may say that we have found that when the intestines of a fetal pig are injected with *B. coli*,<sup>4</sup> especially the virulent type, and incubated, these organisms are seen to diffuse rapidly through the mucous wall of the intestine, up between the glands of the areolar tissue, between the cells and not through them, and then course along the wall of the intestines between the muscle coat and the mucous membrane. At this point many of the organisms undergo bacteriolysis, but in the new-born in whom antigens have not yet been developed their growth continues and spreads throughout the whole organism. Because of these changes which take place in the submucosa of the adult, I have called it the "Zona Transformans." In the new-born and to a lesser degree in young children, we have a different condition from that found in a normal healthy adult, and this is that there is no barrier to the passage of the bacteria, since the wall impervious to the passage of bacteria has not yet been established, that is, as we have said, antibodies have not yet been adequately generated as they have not been needed.

We have in this phenomenon a very satisfactory explanation of one of the factors that predisposes young children to infections and gastrointestinal disturbances.

In the course of these experiments we demonstrated that bacteria fed to the mother might show their effect on the offspring. In fact, colon bacilli fed to the mother have been recovered from the fetus<sup>5</sup>.

In a series of experiments including 155 animals, cats, monkeys, rats, rabbits, and guinea-pigs, we found that all gave the same picture of the migration of the bacteria from the intestine into the submucous tissue (zona transformans). Furthermore, we have been able to show by appropriate staining methods the rate of diffusion and the routes by which diffusion occurs. The route taken was always between the glands and cells and never through them, neither do the

bacteria enter the blood vessels or lymphatics, but they pass by the way of the muscular mucosa. It was found that cultures of *B. coli* injected at different sites took different routes of diffusion, some going to the liver, some to the kidneys, some to the pyloric region, according to the site of the infection. The general direction, however, was cephalad.

The histological changes at the site of retardation or arrest of the bacteria are shown by the fact that the nuclei of the cells of the parenchyma lose their staining properties to both Gram and hematoxylin stains.

## AGENCIES THAT FACILITATE DIFFUSION

It may be stated in a general way that any pathological condition that lowers the vitality and resistance of the child favors bacteria invasion. The exanthema, meat extractives and fatty acids lower the tone of the intestinal musculature and provide conditions for a rapid and overwhelming bacterial invasion. In this connection my experiments in the feeding of meat extractives and fatty acids are both interesting and convincing.

A series of rats and mice were fed on meat extractives with and without the addition of cultures of *B. coli*. In the animals receiving the extractives together with the *B. coli* it was demonstrated on histological examination that the organisms passed into the submucous tissue. All of the experiments demonstrated that in the animals fed on the extractives the bacterial invasion took place more rapidly than in those fed on cultures of *B. coli* without the meat extractives.

In order to demonstrate the effect of feeding fatty acids on the permeability of the intestinal wall, a series of six monkeys was fed with small squares of bread fried in cottonseed oil for thirty minutes. This fatty food was given in addition to the ordinary vegetable diet. All of these monkeys died within periods ranging from thirty-one to sixty-one days, while another series of monkeys under precisely similar conditions, save for the addition of fried toast to their diet, showed no variation from the normal.

Post-mortem examination of the viscera of these monkeys showed fatty infiltration of the splanchnic vessels. The histological examination showed migration of the bacteria into the submucous tissue at various levels of the intestinal tract and in various stages of bacteriolysis. Antolysis of the tissue cells was also demonstrated with the usual picture of acidosis.

It would seem that these experiments afford some confirmation of the present attitude taken by pediatricists with reference to the deleterious effects of feeding milk with high fat percentages to infants. They also explain in a measure and furnish a rational basis for the feeding of albumin milk (Eiweiss milch), in cases of gastrointestinal disturbance with acidosis.

### ANTIBODY FORMATION

We have found that bacteria, or antigens, migrate from the lower alimentary tract to stations further up along the canal. On reaching the stomach they meet more powerful immune bodies (amboceptors) formed in the tissue walls of the stomach and duodenum as the result of the "hypersensibility" of the muscle cells in this region to the protein antigens. The injection of various substances into the blood or tissues may likewise find their way to the stomach or duodenum though not so readily as by way of the intestinal tract. As we have before brought out, in the infant or young child the antibodies in the submucous tissue of the stomach are not yet formed in sufficient quantities to neutralize the protein antigens migrating to them and the result is an overwhelming reaction with consequent splanchnic dilatation and atony.

### SENSITIZATION

The process of sensitization which results in the hypersensitive condition of the muscle cells may be caused either (1) *directly*, as by antigen in the form of some foreign protein which has been absorbed from the lumen of the intestinal tract according to the laws of diffusion of bacteria or other foreign proteins, or (2), *indirectly*, as when the bacteria or other foreign protein antigens transmute into the zona transformans from the colon, ileum, or lower segments (prismatic cephalad) of the alimentary tract.

Hypersensibility may, as we have shown in our experiments with the new born,<sup>6</sup> be transmitted from mother to fetus we then have what is known as passive anaphylaxis. In other words, we have here the scientific basis of congenital susceptibility.

### PATHOLOGICAL PHYSIOLOGY

When the hypersensitive state is present congenitally and when, in addition, we have an exciting cause, as for instance the invasion of bacteria, a spastic state is produced, or spasms occur with contraction of the muscle cells, as a consequence of which we get the anaphylactic state which promotes relaxation and a flaccid state of the muscle cells. As an illustration of this we may cite the tetanization of the muscle cells by electricity whereby one finally gets a complete atony.

In this connection I would like to call attention to the spastic nodes which have been considered as the initiators of motion. It must be remembered that although enervation is essential to co-ordinate movements, the muscle cells will contract rhythmically, irrespectively of the nerve supply until they are weakened by a faulty blood supply or fatigue, and that the processes we are considering are carried on independently of the mechanism of the nervous system.

What actually occurs is that if we have a child born hypersensitive in order that dilatation be produced we must have tension upon the muscles, as the result of overfeeding, water gas, etc. Tension occurs in the areas that are used as reservoirs, and it must not only be temporary but must be prolonged in order to produce splanchnic congestion and atony. In such a state of tension muscles are much more easily fatigued than under normal conditions, and fatigue, as we have shown, results in asphyxia of the muscle cells.

There is normally a delay in the passage of the contents of the alimentary tract at certain reservoirs—the stomach, the cecum and the sigmoid, areas less often involved are the esophagus and the duodenum, though they too may show a certain degree of flaccidity and spasticity, according to the degree of tension to which they have been subjected. As a result of this tension we get splanchnic congestion as one of the earliest manifestations. The alterations in the musculature of the veins in the splanchnic area results in the identical flaccid and spastic condition which affects the musculature in the abdominal viscera (splanchnic area). These changes in the musculature of the viscera and veins of the splanchnic area are always the accompaniment of chronic gastrointestinal disturbances.

Fermentation producing gases may also be responsible for tension and in this latent fatigue over-feeding with carbohydrates plays its part in the production of bacterial ferments, which may sometimes be the exciting factor setting up the whole group of symptoms, fatigue, splanchnic congestion, bacterial invasion, anaphylaxis, asphyxia of the muscle cells and acidosis. It seems unquestionable that the periodicity of attacks so familiarly known as cyclic vomiting or cyclic vomiting with acidosis, may be explained on the theory of accumulation of the intestinal flora due to a combination of several of the factors we have considered and of their migration and spread until a point is reached at which an explosion occurs. That we should have this periodicity in gastrointestinal disturbances due to bacterial invasion is not unexpected since we witness a similar phenomena in other infections as the periodicity of the temperature rise in typhoid fever, in tuberculosis and in malaria. Our experiments seem to have thrown some light on this problem of periodicity.

### TREATMENT

The treatment of gastrointestinal disorders in children as in adults must be guided by what we have learned of the etiology of these conditions, and hence must be physiological, pathological, symptomatological and bacteriological, it must also be governed by the severity of the case and whether it is acute or chronic in character.

the liver was negative, the stomach distended, the greater curvature reaching half-way between the umbilicus and the symphysis pubis. Inflation of the colon showed a dilated sigmoid and a much distended cecum. The examination of the stomach contents showed retention, free hydrochloric acid 65 and total acidity 110. The blood examination showed simple anemia, the feces showed marked alterations in the intestinal flora, undigested starch and fats. Lavage of the stomach was performed and later lavage of the colon. Subcutaneous injection of salt solution was administered and all food withdrawn. Lavage of the colon was performed morning and evening, and also hyperdermoclysis, 100 cc being given at each injection. In comparison with previous attacks this was the most severe one the patient had experienced, consequently it was not difficult to obtain the consent of the parents to carry out any life-saving procedure. A surgeon was called in consultation, but on account of the weakened condition of the patient operation was considered inadvisable. An oculist was called to examine the fundus and other examinations were made to exclude brain tumor. The third day after seeing the patient, feeding was begun by the introduction of 100 cc of a cooked mixture of arrowroot which was introduced into the stomach through the stomach tube. This was retained and in the evening of the same day 200 cc of the arrowroot mixture with the whites of two raw eggs were given. The following day extract-free meat was added in small quantities to the starch and white of egg. Food was given only twice daily, morning and night. Bread crumbs were added to the forced feeding. At the end of a week the patient was up and about. A careful examination of the feces and stomach contents was made. The stomach showed the presence of *B subtilis*. The colon group were present, also lactic acid bacilli and yeast. Cultures from the feces showed very large quantities of the *B coli* and *B capsulatus aerogenes*.

Autogenous sensitized vaccines were administered in addition to the other measures. After two weeks' treatment the stomach area had retracted somewhat but was still below the umbilicus. The colon and sigmoid were still dilated. The mode of treatment which I have outlined was carried out in this case from August 7th until November 5th, by which time the gastric area had retracted to a normal size and the bowel appeared normal. Vomiting had entirely ceased and the child had gained in weight. She has since become a strong robust girl and has no further gastrointestinal disturbances.

Similar cases, treated many years ago, as well as many treated more recently, might be many times multiplied, in which the combined method of stomach and colonic lavage, pneumatic colonic exercises, careful dietetic regulations,

and the use of the autogenous vaccines, have given as favorable results as in the few instances cited. I have chosen these cases bearing dates ten years previous to the present time for two reasons, to show that I recognized the importance of the vaccine treatment many years ago and that my experience with them as an adjuvant in the treatment of gastrointestinal disturbance over a considerable period of time justifies my conviction as to their value, and because I have been able to follow these patients during the period subsequent to their treatment and to assure myself that the cures have been permanent.

## REFERENCES

- 1 Bechold
- 2 Turck Proceedings of the American Gastroenterological Association, 1904
- 3 Turck Chicago Pathological Society, March 21, 1906
- 4 Turck Proceedings of the American Gastroenterological Association, 1914
- 5 Turck *Journal Medical Research*, Vol XVII, No 4, Feb, 1908
- 6 Turck (See Ref 5)
- 7 Turck *Boston Medical and Surgical Journal* (also *Med Standard*, June, 1903)
- 8 Turck "Fatigue of Gastric Muscle" Proceedings of the American Gastroenterological Society, 1903
- 9 Turck Proceedings of the American Gastroenterological Society, 1903
- 10 Turck *Jour A M A*, Jan 11, 1896
- 11 Turck *Medical Record*, June 24, 1916

## PRACTICAL INFANT FEEDING.\*

By J ROBERTS JOHNSON, M D,  
SYRACUSE, N Y

**M**EDICAL authorities agree that maternal milk is the best food for the growing infant and, further that if this cannot be obtained, then properly modified cow's milk is our second choice. Breast feeding is being popularized and insisted upon. No one factor is so important in lessening infant mortality. Five artificially fed babies die to one breast fed. A larger percentage of mothers could nurse their babies if sufficient effort was made and time taken before weaning. Nothing necessary to good health and digestion need be omitted from the diet. Too much food and especially fluids may defeat our purpose, surfeiting the digestion. Outside of three full meals and cow's milk, say one quart in twenty-four hours, given in any convenient form and with the meals, we have no galactogogues. Gruels, and especially yellow corn meal gruel, as recommended by Southworth, have been used with benefit. Bitter tonics and iron where there is loss of appetite and anemia

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Utica, April 24, 1917

may be indicated. The giving of drugs, glandular tissues or milk injections for the purpose of increasing mother's milk have succeeded but temporarily. Education of the expectant mother on this vital matter is receiving wide attention and with encouraging results. Yet having done our utmost the fact remains that a large percentage of infants must be artificially fed. How to make this efficient, yet practical, is our problem.

It is not a question alone for the pediatricist, he sees but a small number of these cases, neither is it limited to the larger centers, where laboratory feedings can be prescribed, but wherever babies are born and often when from lack of previous training or unsanitary environment, it is quite impossible to apply the finer modifications of top milk.

By the term "practical infant feeding," I mean one that is sufficiently scientific, as to meet the needs of the growing infant yet so simple and easy of combination that the intelligent mother can understand.

Because a food formula is complex and marked by mathematical precision of its components, it does not follow that the results will be those desired. Approximate accuracy of the individual need with simplicity should be our guide.

Unfortunately, among pediatricians there is a wide difference of opinion, not in the principles governing infant feeding, but in the methods employed in the adaptation of those principles. Men having unlimited clinical observation are far apart in the definite make-up of infant food formulas. This holds true even when the physical condition of the children is quite alike. The difference being in the child's ability to assimilate a food or otherwise. Textbooks and medical articles on the subject, while highly profitable as a whole, leave the matter in an unsettled position.

The general practitioner into whose care most of the artificially fed cases at first come directs that the baby be given a certain—though very uncertain—top milk mixture with water, lime water and sugar. The results may be satisfactory, but in a large proportion of such cases they are not for any length of time. The mother is perplexed by the changing food combinations, she is discouraged, the baby does not thrive, so she seeks relief in one of the skillfully advertised proprietary foods, then another, and another. Later your advice is sought. This mother's experience is not unusual and because of it she is opposed to cow's milk as an infant food.

The family doctor is more concerned about other matters than the intricacies of infant foods, and rightly so. The mother cares not what food is used if only her baby grows and is happy.

The leaders in pediatric practice in this country are divided on the question of percentage feeding. Some are so enthusiastic in its favor that it is the only method and must be followed

to the letter in each case, others believe that it commends itself to the infant of robust type and healthy digestion, while others are quite indifferent, believing, as do our friends across the water, that its refinements are impractical and unnecessary. Even localities view the subject differently, for if I am correct Boston stands for it to a man, while New York and the Middle West hold divided views. We honor him whose name will forever be linked with this great advance in saving infant life.

For a number of years I struggled with percentage feeding, believing it to be scientifically correct. I taught it to my nurses in training and the mother in the home. Nurses found it a stumbling block and their later efforts in its practical application did not reflect noticeable credit upon their teacher. Most mothers considered its finer adjustments of quantities an added burden and, in many instances, impossible of accomplishment, while the infant, despite the changes, often failed to develop normally. We were attempting to make a cow's milk formula similar to mother's milk and because of this chemical similarity, expected the baby to grow.

Chapin has shown conclusively that it is impossible to modify cow's milk to duplicate mother's milk,—chemically alike, physically they are entirely different, one is cow's for calves' digestion, the other mother's for an infant's digestion. The composition of any artificial food should be based on general principles, considering the age, weight and digestive capacity of the child.

In this connection it should be borne in mind that even under normal conditions and in the same mother at different hours the composition of the milk varies greatly. This variation seems normal and does not cause digestive disturbances. Uniformity of the infant's food according to the breast laboratory does not seem to be a necessity.

Percentage feeding in the hands of the experienced pediatrician where he is permitted to follow closely the slightest digestive changes, and where intelligent co-operation is granted, is often most successful. He must be willing and able to supervise the products of metabolism and to increase or decrease the ingredients according to symptoms. I recognize its attempted accuracy. However artificial feeding to be practical must deal with the masses where we may use the milk of unknown proportions and germ content and advise with mothers where wise assistance and cleanly surroundings are not always found. Because of the complexity of top milk feeding, many physicians assign the more difficult cases to the tender care of the proprietary food maker, and thus escape responsibility. In this matter, there can be no doubt that proprietary foods have been the chief reliance of the general practitioner. The two main reasons for this are, first, the elaborate

while there is abundant clinical evidence that it is easier of digestion, as well as safer. Later, when the infant is older and the digestive functions have become accustomed to cow's milk, I use it raw. The prevalent idea that boiled milk is constipating is greatly overstated.

That there is a tendency on the part of boiled or pasteurized milk to produce some of the nutritional diseases is evident, but these disturbances seldom occur if the heated milk is used for only a limited time. The destruction of disease-producing bacteria by boiling the milk greatly overbalances any temporary nutritional disorder.

There is a widespread idea that pasteurizing milk renders it harmless as a food, even when given for a long time. This is not quite true, as scurvy is fairly often seen in cases thus fed. Within a few weeks I have seen two such, one having the food for nine months, the other for seven.

As an anti-scorbutic every artificially fed infant past three months of age should be given orange juice and preferably without sugar.

It has been shown that under normal conditions it requires two to three hours for all the milk of any one meal to leave the stomach. There should be an interval of digestive rest before the next meal is given. Seven meals in twenty-four hours are sufficient up to the fourth or fifth month, given at six, nine, twelve, three, six, ten and two, and then six meals up to the tenth month, thereafter, five meals in twenty-four hours. Many children do better during their second year with only four meals.

Forty to forty-four ounces of fluid taken as meals should be the maximum at any age and of milk one quart is usually sufficient. Too much milk after the first year disturbs the stomach, lessens the appetite and supplies only about one-third to one-half the caloric value of our common foods, thereby underfeeding the child.

The digestive capacity of each infant must be determined by a close study of the individual child, its digestive history, weight, stools, etc. Considering that from 20 to 30 per cent of all infants are bottle fed, that the problem of feeding rests largely with the mother and general practitioner, would it not be worthy of this organization to recommend something of a uniform method practical in its application and efficient in its results?

### Discussion

DR FRANK VANDER BOGERT, Schenectady. I am glad Dr Johnson has brought up the subject of the care of the nursing mother. A great many nursing failures unquestionably depend upon the elimination from the diet of the mother of foods supposedly harmful to the milk and upon overfeeding of the mother in an effort to make milk. My own practice is to allow anything, acid or otherwise, which is not known to upset the digestion of the mother or which cannot be directly shown to upset the baby. The laity should, I believe, be educated as to the dangers of underfeeding or of feeding an unbalanced diet. Not long ago I was called to see a nursing mother who had been told to eat nothing but potatoes and was later advised to cut out potatoes.

On the other hand, overfeeding is, no doubt, a frequent cause of failure of the breast supply. I should go further than Dr Johnson and advise three meals daily, with milk only when there is an appetite for it and at a definite period with relation to meal times so as to allow of good digestion and assimilation. Nurses are often responsible for overfeeding. One of my patients was exceedingly enthusiastic about the care her nurse had given her—she had fed her every two hours—but the milk was practically gone.

Constipation in the mother is, I believe, a frequent source of the trouble in the nursing baby. Although we are told that certain laxatives are not eliminated in the milk, I have little doubt that in some direct or indirect way they render the supply unpleasant to the child. The constipation itself must be responsible for toxin elimination in the milk. It is not a difficult matter to treat constipation without drugs, and routine daily enemas are seldom necessary.

With reference to diet, bran and agar agar usually suffice and have no effect whatever on the milk.

The prescription of regular habits for the baby is just as important as for the mother. Irregularities as to nursing periods not only injure the baby but impair the milk as well. Too frequent night feedings, often occasioned by the baby sleeping in the same bed with the mother, and the effort to get water into the baby between meals, by sweetening with sugar, together with irregular and too frequent feedings, generally, I should consider as the most usual causes of failure from the baby's standpoint.

I shall not say much about artificial feeding. I will, however, take exception to Dr Johnson's statement that it is wiser to overfeed than to underfeed. If I must do one or the other, during the first six months at least,

I would prefer to underfeed, because I believe that so many of the troubles of the second summer depend upon early overfeeding. But we do not have to underfeed sufficiently to do harm. If there is a question whether the baby is suffering from real hunger or from tissue hunger the caloric value ought to roughly settle the point.

We can talk as much as we please about simplified feeding, but every baby will not thrive upon simple milk and water dilution, even when boiled and with sugar added. Our whole ability to feed properly, as I see it, depends upon our ability to interpret symptoms and to elicit a history of past causes of trouble. A baby who has been fed on condensed milk, for instance, will not do well on another high sugar food. One upset by a top milk mixture will not take cream well. A fat constipated baby will not be relieved by increasing the fat. We must know our history and our symptomatology better and then we will be more successful in giving artificial food.

DR WILLIAM B. HANBIDGE, Ogdensburg. I have been very much interested in Dr Johnson's account of his results with a very simple method of infant feeding. Any method that will be generally adopted by mothers must be easily put in practice, and prove satisfactory. A complex method is economically impossible for it requires trained attendants, also the supervision of a physician. As a large family is the poor man's blessing, expense has to be considered.

I have traveled the same road as the doctor but have gone a little farther. For some twenty years I have been experimenting with whole milk without any addition except sugar. The results have been so good that I have come to the conclusion that 86 to 88 per cent water, which is about the amount in cow's milk, is quite enough and that digestibility is not improved by the addition of water.

Of late years our English friends have been adding citrate of soda to milk and reporting good results. I believe they would be quite as good without such addition. I have fed thirty-nine infants, nearly all of them successfully, for various periods on milk without anything being added. The attendant has been very positive that they cried less than those that received sugar.

I will refer any person interested in the details of my cases to a paper published in the State Journal of our Medical Society in April, 1912, also to a paper read at the Rochester meeting.

I think if Dr Johnson's paper were carefully studied by every young physician he would have a method easy to comprehend and apply, and his results would be good.

DR WILLIAM C. TODT, Oswego. Dr Johnson has covered the points of his subject thoroughly and ably and has spared us a lot of theorizing and confined himself to the practical. Those of us who live in more rural surroundings have to contend a little more with the menace of artificial feeding.

Before looking for the cure it is wise to look for the cause and prevention. Infant mortality is due largely to improper feeding, poor material to work with and ignorance on the part of the mother, with at times, lack of interest on the part of the physician. The nurse who would rather mix up a little malted milk than struggle with a nervous primipara and a fretful infant is one of the greatest causes of bottle babies. This same nurse may possibly have a bottle of paragon up her sleeve. Look out for her.

To those of us who live in rural districts where the milk supply is doubtful an additional menace presents itself. The milk from inspected herds and dairies is sent to the large cities and the milk from the tuberculous cattle is left for home consumption. I hope some day our Department of Health will follow this subject more vigorously than heretofore.

Like Dr Johnson, I have great faith in Eagle Brand condensed milk. In the proportion of one tablespoonful of milk to thirteen of water, the seven ounces are enough for three or two feedings. The addition of cream in a preparation of bone marrow (of this I have found diabolical, an English product the best) has advantages.

A suggestion I would like to present is that of the position of the infant while being fed. Held in the same position as when at the breast the gas escapes in small amount, whereas, if lying prone, the gas accumulates until it escapes in a burst, bringing up with it a large amount of the food.

Another remedy of our grandmothers is inunction with goose oil. It is surprising how much of this the skin will absorb.

The many preparations we have seen come and go and need no mention. If you must use artificial feeding, get good milk and then keep at it until you find the proportion suited to the special case.

DR CONWAY A. FROST, Utica. In a general way, the food question for the nursing mother resolves itself into a question of what agrees with her. I do not restrict the mother's diet further. If the mother is well in the majority of instances the mother's milk will agree with the infant. I have been particularly pleased that Dr Johnson emphasizes this as it has always been one of my hobbies. There is more trouble from worry over the cook and the

Within the past two years, three especially typical feeding cases have come under my care, one in consultation, two referred, in which the attending physicians had failed to secure results from dietetic measures

All were apparently dangerously ill, one practically moribund

The first, seen in September, 1915, an infant, three and one-half weeks old, weighing about six pounds at birth, and probably less when seen, had been vomiting for two or three days with loose stools and was practically moribund

The baby had been weaned because of a so-called "nervous spell" in the mother and because there was said to be very little milk. He (or she) had been fed on condensed milk—1—16 and later on Mellin's Food (both high in carbohydrates) which were said to disagree, and at the time of my visit was taking barley water only

Cultures of the stool in milk showed a large amount of gas production

A liquid *Bulgaria Bacillus* culture given in dram doses before each feeding was followed by immediate improvement, and seven weeks later the child was reported well

The second especially typical case, twelve months old, was seen in March, 1915, in consultation. There was a history of "grippe" in the family for two or three weeks past. For the first six months the baby was said to have been a skeleton. He had been fed on whole milk and Dextrimaltose mixture with crackers (again high carbohydrate food). When seen he also was taking barley water only, and apparently because of weakness, had to be fed by hand

Illness began five days before with vomiting which stopped and recurred two days later, continuing for a couple of days. He was irritable, sleepless with a temperature of  $105\frac{3}{5}$ —no teeth at twelve months with very marked gas on culture of stool. He was put on *Bacillus Bulgaricus* before test was completed. Improvement was rapid

In May, temperature was still elevated slightly. On May 10, his gums were congested and his temperature rose to 103 degrees, rectum. On May 20, gas was again positive. On May 25, he had gained weight and in early June no gas developed on culture

In November, 1916, a brother of this child developed a large abscess under the lower jaw. Gas developed on culture of pus from this abscess. Whether this bore any significance I do not know

The third case, three weeks and two days old, was seen on January 7, 1917, because of frequent convulsions. The family history showed that the first pregnancy was a child now living, but not ruddy. The second pregnancy was terminated because of kidney trouble in the mother. The third was a miscarriage at five months, the

fourth pregnancy, was full term, the baby weighing about four and one-half pounds. She began to have frequent convulsions at ten days, which continued until I saw her. There was a history of much colic from birth, occasionally vomiting with gas or air and a ravenous appetite. She had been given much castor oil and was losing weight. This baby had been nursed for nineteen days at three to three and one-half hour intervals, then because of fear on the part of the attending physician she had been weaned and put upon malted milk every two hours (again high carbohydrate). There was a very marked gas production on culture of the stool

*Bulgarian Bacillus* was given in liquid culture and two months later the stool gave a negative culture for gas. At one time early in the illness an effort was made to resume breast feeding. The mother was exceedingly nervous and a convulsion occurred. There have, to my knowledge, however, been no recurrences

Although skin affections apparently due to digestive disorders at times respond to treatment with the lactic acid bacillus, eczemas, in my experience, are not often favorably affected. Cases, however, which show infection with the gas bacillus have been most successfully treated in this way. They seem to be those of the red, dry, glossy type "Eczema Rubrum"

The following will illustrate the value of the *Bulgarian Bacillus* in this type of eczema

The patient, thirteen and one-half months old, was seen on January 26, 1917. A sister had recently died from abscess under the jaw and had also had eczema. The lesions had been present with temporary improvement since summer. Cutaneous tests with milk and egg white were, as I remember, negative. She had vomited an egg the day before I saw her. She had had no colic since very young

The bowels were apparently in good condition. Stool culture showed gas. There was a very marked improvement on *Bacillus Bulgaricus*. An inflamed area under the chin on February 16th, with gland enlargement, was lanced but no pus found. At this time the stool again showed gas

This case gave a perfect result. Other cases of eczema similarly treated but in which the gas bacillus was not demonstrated have not responded

Where culture does not show gas production, the bacillus treatment seems to be of little value. In but two cases with no gas do I remember real results and in one instance the curd of the inoculated milk was almost completely dissolved but without the production of gas. The other had been taking the treatment for several days before culture was made and the symptoms were later found to be due to a colon bacillus infection of the bladder

Certain colicky babies are relieved by the treatment, but I believe most distinctly those infected by the gas bacillus

Older children with chronic intestinal disturbances in whose stools the gas bacillus can be demonstrated usually respond readily to the lactic acid cultures, as do also those showing anaemia and functional nervous disorders apparently dependent upon gas bacillus infection of the intestinal tract. The effect upon the weight, color and disposition of the child is often most gratifying. The following case will illustrate the value of the treatment in one of the severe functional nervous disorders

A child of four years was seen on August 1, 1916. She had had a convulsion on the previous day. One week before, while bathing, she fell under water during a similar attack. She had had colic as a baby and had cut her teeth late (first at eleven months). She ground her teeth, had a tendency to geographical tongue and had had a cough with every erupting tooth. Her urine was negative, stool's mucous and showed gas on culture.

Symptoms were quickly relieved by lactic acid culture with regulation of the diet. She had been carefully fed previously.

My object in citing these cases has been to show the apparent very great value of the lactic acid culture in the treatment of a certain group of gastrointestinal disorders, where indicated, and to suggest that its indiscriminate use will not always be followed by satisfactory results. It is very possible, however, that some conditions in which the gas bacillus cannot be demonstrated may be benefited. High sugar fed cases, for instance, may be reasonably expected to improve because of the action of the lactic acid producing organisms upon the excess of carbohydrates.

It must be remembered that success of the treatment depends not only upon the organisms involved but upon the regulation of the diet as well, realizing that the gas bacillus feeds upon carbohydrates and produces its ill effects by its action upon this element of the food. Carbohydrates must therefore be reduced, not completely eliminated, because the lactic acid producing organism requires carbohydrate for its development.

Personally I have used liquid cultures. They must be kept cold, otherwise they very probably will destroy themselves by over-production. Buttermilk was not used because of difficulty of procuring.

For the discussion of the effect of the lactic acid culture in the treatment of the acute diarrhoeas, I cannot fail to suggest a careful reading of Dr. Morse's article above referred to.

## NOMA \*

By EUGENE E HINMAN, M.D.,  
ALBANY, N. Y.

NOMA is an affection deserving of more attention than is ordinarily given to it by the profession at large. Complicating as it does some of the well-known infectious diseases, many of which, not being of a serious nature, we are apt to overlook the presence of this terrible complication, and its rapid development may easily lead to a fatal issue before steps are instituted to combat it. Fortunately it is an affection which is chiefly found in infancy and then most frequently among children in unsanitary surroundings whose physical condition is poor, or in epidemics of acute infectious diseases arising in institutions for children. Under such circumstances we naturally think of it as a possible complication and are on our guard and ready to take prompt measures to combat it. On the other hand there is doubtless a large percentage of physicians having large practices who have never seen a single case of noma, to know it.

We must now get the impression that noma is a disease limited to children for we have reports of cases, rare indeed, where adults have been the sufferers. It is said to be especially frequent among adults in India. King, in an investigation of noma among adults, in 1911, reported that he had found in the literature, between 1848 and 1903, reports of about sixty-three cases of noma in adults. The patients' ages ranged from eighteen to seventy and they were chiefly poorly nourished, cachectic subjects, living in unhygienic surroundings. The reports showed that the disease developed after erysipelas, typhoid fever, amebic dysentery, pluriitis and nephritis. Stephenson believes that renal disease is a very important factor in the causation of noma in the aged.

King reports a case of cancrum oris occurring in an adult, a woman aged fifty-nine, whom he found to be in an advanced stage of chronic interstitial nephritis, with endocarditis, and who plainly had but a short time to live.

Two weeks later she presented a slight swelling on the left side of her face and an examination of the mouth revealed a small ulcer on the gum, on the outer aspect of the mandible, a fetid odor and very bad teeth. The swelling materially increased in seven hours and the ulcerated area became a dark dusky red which was soon followed by a circumscribed area of dead exudate with sloughing. By the morning of the third day the entire surface of the left cheek was a necrotic mass, the tongue greatly swollen and speech and deglutition difficult. Later the same day the

necrosis had extended through the cheek, there was profound prostration, feeble pulse, suppression of urine and the patient died before midnight in a state of coma. Only twice during her illness did the temperature exceed 100 degrees F. Bacteriologic examination of the scrapings and secretions in this case showed, with Leishman's (Romanowski) stain, spirochaeta dentium and pus cocci in large numbers, together with organisms of the leptothrix type and a few fusiform bacilli. A comparative examination of these tissues with stained specimens from a known case of Vincent's angina showed distinct morphological and cultural differences between the organisms of Vincent's angina and the organism which probably causes noma.

King's conclusions were that noma does exist in the aged but its occurrence is rare, that it does not materially differ from the disease as seen in childhood. No definite organism has been established. The long thread-like bacillus so frequently regarded as the cause of noma is on conjectural grounds and it is highly probable that noma is a process caused by more than one organism.

The greater reported frequency of noma among girls is probably due to the fact that it quite often attacks the vulva, spreading to the anus. Many of the children referred to in reports had this gangrenous disease of the vulva and sometimes of both vulva and anus. While noma is thus found involving various parts of the body it shows a very marked predilection for the mucous membrane of the gums and cheeks, and it is this form of the disease to which I invite your attention more particularly, noma of the mouth, or cancrum oris.

Cancrum oris has been given several synonyms. We hear it mentioned as noma, gangrenous stomatitis, gangrena oris, stomato-necrosis, necrosis infantilis, etc. Richter, in his first treatise on noma, termed it Wasserkrebs, by which it is still known and referred to in German literature. It is a rare disease at best and being given such a multiplicity of names its etiology has doubtless been rendered more uncertain.

A number of writers have reported two or three cases of cancrum oris occurring at one time among children in institutions, but it rarely assumes epidemic form. Blumer and Macfarlane reported a most interesting series of cases which did assume the proportions and characteristic of an epidemic. During an epidemic of measles developing in an orphanage out of 173 cases of measles 32 had complications and of these 16 developed noma, involving the mouth, ear, vulva and rectum. In some only one region was invaded while in others it appeared in several places. Seven of the sixteen patients died. Neuhof, in 1910, reported a series of 8 cases oc-

curring in an infant home among 81 cases of measles, with 3 recoveries.

This disease is a very rapid and probably specific infectious process, gangrenous in type, developing on the mucous membrane of the gums or cheek and producing extensive sloughing and destruction of tissues. Although occasionally an independent affection it usually is a complication of or a sequel to several of the infectious diseases, such as measles, scarlet fever, diphtheria, typhoid fever, pertussis and dysentery. Osler claims that at least 50 per cent of these cases develop during the convalescence from measles. Krahn, in 1900, reported 55 out of 133 cases developing after measles, and Bouley and Caillant found that measles was the antecedent in 41 out of 46 cases. A few cases of cancrum oris complicating typhoid fever have been reported. Clifford and Moore, in 1912, reported one such case, which recovered.

Investigators have for many years sought for the specific organism for noma. In 1888 Lingard thought he had the cause of noma in the long thread-like growth which he found in nomatous sloughs. Ranke, in the same year, found certain unknown cocci in noma tissues, the nature of which have never been recognized. Weaver and Tunncliffe, in 1907, made an exhaustive investigation in the literature of the bacteriology of noma by such men as Gravit, Bertels, Guizetti, Babes, Foote, Ranke, Schimmelbusch, Kuster and others. The majority of the cases of these observers showed mixed cultures in the superficial parts of the slough, while in the deeper parts the sections often showed a growth in pure culture. The most frequently noted organisms were slender, thread-like bacteria easily decolorized by Gram and not growing in ordinary media.

Hellesen isolated a gram positive non-encapsulated diplococcus which in animals produced typical and specific tissue necrosis. Matzenauer believed that noma and hospital gangrene were identical and due to an anaerobic bacillus. It is highly probable that noma begins as a simple infection but that it rapidly becomes a mixed one.

A frequent and careful examination should be made of the mouths of every patient suffering from measles, for frequently the first evidence of cancrum oris does not cause any subjective symptoms and the patient does not complain of any distress. The first appearance of the disease is a small indurated spot on the cheek or gum, and if on the cheek it is usually quite near the angle of the mouth. Within six hours, often less, this darkens in color and breaks down, forming a small ulcer. The area of ulceration soon spreads, rapidly becoming gangrenous, the entire cheek presenting an induration which is red and glossy. If a patient's mouth is not fre-

quently inspected this induration may be the first warning that the disease is present. The necrosis progresses very rapidly and the tissues melt away in a very few days, speedily involving the whole cheek and perforating through the integument. The process also spreads to the alveolus, ulcerating the gums, loosening the teeth and exposing the bone itself. The tongue is occasionally, though not extensively, the seat of disease. Other spots may appear and involve all of the tissues of the face from the forehead to the neck, leaving a black, stinking mass of putrefying flesh with loosened teeth and exposed bone. A very foul and characteristic odor accompanies the disease even early in its progress.

The constitutional symptoms, aside from a languor and disinclination to eat or even move about, are generally mild, despite the rapid and violent character of the local process. The lymph nodes of the side involved are very promptly enlarged and become tender. Temperature, if present at all, is apt to be of a hectic variety, seldom above 101 degrees F.

Cancrum oris has a very high mortality, from 75 to 80 per cent. The duration of the disease is from one to two weeks from the first appearance of the induration. In some children, whose normal resistance is poor, a fatal termination has occurred in four days, death being due to sepsis or broncho-pneumonia. In those cases which recover very extensive scarring is apt to be present and sometimes large openings through the cheek remain to be closed by some plastic surgery.

Many lines of treatment have been advocated for this disease. The application of various antiseptics have been tried but with little effect. Excision of the necrotic area, curettement, or the application of the actual cautery freely have given the best results. By whatever means are employed a thorough removal of the gangrenous tissues is above all imperative. A study of the literature leads me to believe that thorough curettag of the diseased area under a general anesthetic, followed by the local application of 50 per cent formalin to the wounds and adjacent mucous membrane, is as effective as any line of treatment. By this method we avoid excessive hemorrhage so often attending excision, which surely weakens the already debilitated patient; we avoid the sloughing of healthy tissue which generally follows the use of the actual cautery, and I believe that after thorough removal of all necrotic tissue the formalin will penetrate into the zone surrounding the gangrenous process and destroy many pathogenic organisms there. It is in this zone that the specific organisms are probably to be found in large numbers and in an active state.

In the choice of general anesthetics it has been found that ethyl chloride gives excellent satis-

faction. The majority of these patients have irritative lesions within the chest and it is often very difficult to administer any anesthetic because of the swelling of the tongue and fauces. In all such, ethyl chloride is ideal. Its action is very prompt, it is not irritating to throat or chest and in a very few breaths the patient is under and is not subjected to the strain of a struggle in an already weakened condition. When the necrotic area is not extensive the treatment may be carried out without any anesthetic for they apparently do not suffer much of any pain and we avoid the added risk of the anesthesia.

In some cases the local application of carbolic acid has proven effective, especially when used early in the disease, or following the curetting. Weaker solutions of formalin may also be applied to the curetted surfaces several times daily.

DeSanctis of New York reported in 1915 the apparently successful use of neo-salvarsan in the treatment of cancrum oris. In the case of a child of five years, in addition to curetting the necrotic area on the inner surface of the cheek and applying pure carbolic acid to the wounds he injected 0.45 gram of neo-salvarsan and secured a prompt recovery. The morphological similarity of the organisms so frequently found in these cases and the spirillum pallidum probably originally led to the use of this drug.

Special attention must be given to the diet of these patients. Their need of a strongly supporting food supply is urgent and yet the mouth conditions often almost prevent eating. Generally we have to depend upon fluids alone and these should be given at frequent intervals. Free alcoholic stimulation is of great service in combatting the profound sepsis.

During an epidemic of measles in the Ellrott Austin Infant Home, through the courtesy of Dr. Frederic Conway, the attending physician, I was fortunate to be able to observe several unquestionable cases of cancrum oris. About 160 children developed measles, four of which were complicated with cancrum oris, with one recovery. These children were all under five years of age. The noma developed after the rash was fully developed and progressed to extensive sloughing within two days after its discovery. Curettag of the diseased area, under ethyl chloride general anesthesia was done for two of the children, followed by applications of formalin and carbolic acid. Rapid grave cerebral and pulmonary complications prevented operation on the other two. Of this group of four cases one of the two operated upon recovered. The patient, a girl of four years of age, was the first to show symptoms of noma. Four days after the full development of the rash she showed a small indurated area on the mucous membrane of the right cheek. A small necrotic spot showed within

twenty-four hours and despite local treatment rapidly progressed, involving the entire thickness of the cheek and appearing on the integument on the second day after. Under ethyl chloride general anesthesia the gangrenous area was removed, leaving a hole through the cheek the size of a silver quarter, and the necrotic tissues on the gum were thoroughly curetted. Following operation strong formalin was well rubbed into the surrounding tissues several times daily. As soon as the necrosis was apparently controlled the formalin was stopped and 10 per cent silver nitrate substituted. The slough, which was originally very near the angle of the mouth, extended in that direction until it included the mouth. Healing finally resulted and during the recovery, before plastic surgery was resorted to nature contracted the wound and gave a very satisfactory closure of the wound.

Bacteriological examinations showed a variety of organisms present, in the secretions of the mouth and in the sloughs, with a preponderance of a gram-negative, anaerobic cocci.

In conclusion I would again urge upon all of us who see these cases to insist upon daily examination of the mouth of children suffering from the acute exanthemata, especially measles, otherwise this dreadful complication will continue to main its high mortality rate and take its toll of these little lives. We are working against great odds at best and, considering the extremely rapid progress of noma, we must recognize it very early and take very prompt steps in its treatment if we hope to check its ravages.

#### REFERENCES

- 1 De Sanctis *N Y Med Jour*, September, 1915
- 2 Clifford and Moore *Jour A M A*, April, 1912
- 3 Newhof *Am Jour Med Science*, 1910
- 4 Lusk *Med Record*, February, 1910
- 5 Reges *Philippine Jr of Sc*, 1913
- 6 Blair "Diseases of Mouth," 1912
- 7 Brown "Oral Diseases," 1912
- 8 Brophy "Oral Surgery," 1915
- 9 Osler "Modern Med," 1908
- 10 Osler "Pract Med," 1912
- 11 King *Jour A M A*, May, 1911
- 12 Blumer and Macfarlane *Jour Med Soc*, 1901
- 13 Lingard *London Lancet*, 1888
- 14 Weaver and Tunnicliffe *Jr Infect Dis*, 1907
- 15 Hellesen *Jahrb f Kinderh*, 1908
- 16 Matzenauer *Arch f Derm*, 1902
- 17 Stephenson *Brit Guiana Med Annals*, 1892

#### Discussion

DR ANDREW MACFARLANE, Albany. The very fact that I have been asked to discuss Dr Hinman's paper on noma is indicative of the little progress that has been made in the appreciation and understanding of this frightful and horrible malady.

In 1900 it was my good or bad fortune to see, after an epidemic of measles, a number of cases

of noma. These cases were carefully studied by Dr Blumer, who was then in charge of the Bender Laboratory, and myself, and later published. But our findings threw no new light upon the subject. Several facts, however, were disclosed by our investigation.

First, that the epidemic was limited to one section of the girls' side of the institution and no new cases followed after the isolation of those affected. Bad hygienic surroundings and poor food seemed not to have been important factors in the development of the epidemic.

The institution is placed upon high grounds in the city of Albany with pleasant surroundings, much better than those of the average child in the city. The food, though somewhat monotonous, was wholesome and nutritious. A dietitian was employed after the epidemic to analyze the food value of the meals as given to each child and it was estimated that the average value was about 1,750 calories. For some years the health of the institution had been unusually good and the mortality very low. The only treatment which seemed at all efficacious was the use of the Paquelin cautery. In those six cases which were not included in this epidemic the Paquelin cautery was used at the earliest manifestation of the disease and apparently in those cases, at least, it made no further progress. The fact that the disease affected exclusively the various orifices of the body rather shows the possibility of infection by the fingers of the child.

#### THE TREATMENT OF WHOOPING COUGH

By HENRY L K SHAW, M D,

WHOOPING cough is generally considered an unpleasant but not a serious or dangerous disease of childhood. Statistics prove, however, that in young children it is the most fatal of the group of so-called infectious diseases. Fully 80 per cent of the deaths from whooping cough in New York State during the five year period, 1910 to 1914, were of infants under two years of age, and 96 per cent of the whooping cough deaths were among children under five years of age.

The following table shows the incidence of fatal cases of whooping cough in New York State, and points conclusively to the fact that if a child has been protected against whooping cough in the first five years of its life, the chances of an attack proving fatal are very slight. These figures correspond very closely to those in other states and in foreign countries. They may be considered as minimum figures since many of the deaths caused primarily by whooping cough are described in the death certificates as due to one of the many complications incident thereto.

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Utica, April 25, 1917.

TABLE II  
Deaths 1910-1914  
(U S Census Figures)

Age at Death	Total Number	Annual Average	Per Cent of Total
Total—all ages	3,628	726	100.0
Under 1 year	2,024	405	55.8
1-2 years	878	176	24.2
Under 2 years	2,902	580	80.0
2-3 years	342	68	9.4
3-4 years	152	30	4.1
4-5 years	79	16	2.2
Under 5 years	3,475	695	95.8
5-9 years	112	22	3.1
10 years and over	41	8	1.1

Rosenau, of Harvard, states that "in our country, the disease ranks high as a cause of death among children. The mortality figures would be still higher, if all the deaths directly or indirectly due to it were completely reported, for the fatal termination of it is usually due to complications and sequelæ, which occur in one-fourth to one-third of all cases. As a result of these complications, the original disease is frequently lost sight of entirely in our vital statistics."

The importance of controlling and preventing a disease which has such a high mortality in early life, and such a long and often protracted course, leaving the child debilitated and susceptible to broncho pneumonia, tuberculosis and diarrheal disease, can not be too strongly emphasized.

While the subject under discussion is the use of vaccines in the prevention and treatment of whooping cough, yet we must bear in mind that the most rational and important step in its control is the avoidance of the disease itself. Unfortunately, this is beset with difficulties. The diagnosis of whooping cough in the early stage is extremely difficult as the characteristic cough does not appear for two or three weeks and the diagnosis is rarely made before that time except during epidemics. In the meantime, the disease is widely spread and specific treatment is not given at the time when it is of most value.

The very great importance of an early recognition and a prompt reporting to the health authorities of whooping cough should be realized both by the general public and the medical profession. Every cough should be regarded as suspicious until its real nature is ascertained, and while in doubt the child should not be permitted to associate with other children. Penalties prescribed by the Sanitary Code for failure to report cases of whooping cough should be enforced just as rigidly as in cases of infantile paralysis,

scarlet fever, diphtheria and smallpox. Infected children should be isolated from other children, and when they appear on the street should wear a distinguishing mark, such as an arm-band, with the words "Whooping cough" in large letters. The sputum and vomitus should be treated in the same manner as in tuberculous affections. Dr Morse believes that hospital provision for whooping cough is the only method of controlling and stamping out an epidemic. The value of isolation hospitals was demonstrated in the recent epidemic of infantile paralysis, and similar results might be obtained with whooping cough.

The medical treatment of whooping cough is not only unsatisfactory, but usually is of little avail. The fact that there are 999 alleged "sure cures" for whooping cough, is sufficient proof that we have not yet found a medicinal remedy of much value.

The discovery by Bordet-Gengou in 1906 of an organism, which they claim is the cause of whooping cough, opened a way for a more rational and scientific mode of treatment. Many bacteriologists have confirmed this discovery and shown that this bacillus fulfills the postulates of Koch.

Mallory, of Boston, has proven conclusively in a recent investigation that the Bordet-Gengou bacillus is the cause of whooping cough. The organism is present in large numbers in the sputum during the catarrhal stage, and can be readily and easily demonstrated from smears. Dr Morse suggests that a child shall be kept in quarantine, similar to the present method of quarantining diphtheria cases, until the smears from the sputum fail to show this bacillus. The recognition of this organism has made possible the use of vaccines in the preventive and curative stage.

Pertussis vaccines are prepared by several commercial houses, by the New York City Department of Health, and in the laboratories of the State Department of Health. Those prepared and recommended by the commercial houses are polyvalent, that is, they are a mixture of vaccines, not only from the Bordet-Gengou bacillus but containing influenza bacilli, streptococci, etc. The vaccines prepared in the laboratories of New York City and the State Department of Health are pure vaccines, standardized by Wright's method from the Bordet-Gengou bacillus.

Dr Holt has shown that a cough which clinically resembles whooping cough is not infrequently caused by the influenza bacillus, so that in these cases the pertussis vaccines would have no effect. There is also a probability that there are several types of the Bordet-Gengou bacillus. These facts should be borne in mind before con-

demning the use of vaccines which prove unsatisfactory in a small series of cases

Graham, in 1911, reported before the American Pediatric Society the use of a commercial shot-gun vaccine in twenty-four cases, and found 71 per cent of the cases were benefited. He therefore felt that a more extensive trial of the vaccine was warranted.

Hess, in 1914, made an exhaustive study of the use of vaccines in the prevention of whooping cough. An epidemic occurred in the Hebrew Infant Asylum. He gave prophylactic vaccines to 244 children. Twenty of these cases were of the shot-gun variety from two commercial houses, and fourteen, or 13½ per cent of this number subsequently developed the disease. The vaccines prepared by the City of New York were used in 141 cases, and only six cases, or 4 per cent of the number, developed whooping cough.

At St. Margaret's House for Infants in Albany, 164 children were exposed in four different epidemics, and eleven cases, or 7 per cent of the number developed the disease. The vaccines administered were from pure cultures prepared by the State laboratory. In former days when whooping cough developed in an institution, at least 80 per cent of the inmates contracted the disease.

The value of the vaccines as a prophylactic measure is undeniable, and they should be administered to every child exposed to whooping cough. Lutinger did not find a single severe reaction in over 3,000 injections, and this has been the experience of the writer, who has administered large doses to infants six weeks old. It can therefore be stated that vaccines are harmless, do not produce severe reaction, and there is no danger of anaphylaxis. The dosage used for prophylaxis at St. Margaret's House is the same as for the treatment, namely, five hundred million, first injection, one billion for the second, two billion for the third, giving the injections every second or third day. We have administered, with good results, one billion every two days for ten days.

The results from the vaccine in the treatment of cases already in the paroxysmal stage are not as striking as in prophylaxis, but the consensus of opinion of those who have employed the vaccines is that where the proper vaccines are used there is a shortening of the paroxysmal stage, with a reduction in the number and severity of the paroxysms. A study of the use of vaccines in 112 cases of whooping cough, in which this was the only treatment employed, shows that in 36 per cent of the cases in which the vaccines were given after the whoop developed, the course of the disease was shorter than the usual duration of the whooping stage, that is, thirty days, but with no effect on the number and severity of the paroxysms, in 52 per cent there were

fewer paroxysms and of lessened severity, especially at night, in 12 per cent of cases there was no improvement observed, either in the course of the disease, its severity or the number of paroxysms.

The laboratory of the State Department of Health is prepared to furnish vaccines which are prepared from the pure cultures of the Bordet-Gengou bacillus. These can be obtained by health officers in packages containing three individual, graduated doses, or in small vials containing 10 c.c. This vaccine was first distributed in January, 1916, and during the past year 4,124 outfits were supplied. It is strongly urged that the health officers avail themselves of this opportunity to obtain the vaccines, and to recommend its administration to all children who are exposed to the disease.

### Discussion

DR. FRED M. MEADER, Albany. The treatment of whooping cough has interested me for some time. I am not in active practice and do not have the opportunity to study cases myself, yet as I talk with physicians I am impressed with the results that are reported to be obtained with the vaccines. Of course when one talks casually with physicians one must bear in mind that these results are largely impressions, the patients are not in the hospital under control, and hence what one hears is not to be given the greatest weight. However, the consensus of opinion is that the vaccines have considerable value as a prophylactic measure.

There is a question as to how long the immunity lasts. Apparently immunity does not last a great while, possibly not more than two or three weeks. It should be used prophylactically during an outbreak of whooping cough and should be repeated with every outbreak. We are getting better results now than when we first used the vaccines because we are giving larger doses. We first gave only fifty to one-hundred million, whereas we are now giving from five hundred to one thousand million, every day or every other day for ten days.

Rabbits have been immunized with single strains; some strains produce a better agglutinating serum than others. The strains producing the best agglutinating serum are found to produce the best immunity in the human. This might explain why we do not always get results with stock vaccines. It may be advisable to prepare a vaccine from cases in the same locality in which the vaccine is to be used.

In regard to getting the organisms for these vaccines, it is sometimes rather difficult to obtain them, one either cannot find the organisms, or if he does find them cannot make them grow.

One must obtain a good sample from which to obtain a culture. One must avoid the saliva from the mouth and obtain the thick tenacious material coughed up early in the course of the disease. The material should be cultured within a few hours.

From examinations of this kind it is our impression that these cases are not infectious for a very long time and that during the later stages of the disease it is not infectious. It is possible that our period of isolation is too long, but I cannot speak definitely on that point at this time.

DR H L ABRAMSON, New York. I have had some experience in the study of whooping cough with Dr Luttinger in New York City, and I would like to impress upon you the highly contagious character of this disease. We had many cases from the lower East Side and most of these came from epidemic foci. In one of these foci, every child in one tenement house was coughing or had recently had whooping cough. When new cases came into our clinic, we could predict in a great percentage of cases from what one of these foci this particular case was derived.

I also had the opportunity of observing typical cases of whooping cough. At the Hebrew Infant Asylum, three children in one of the wards developed a cough which for ten days was considered bronchitis. Then they began to whoop and vomit. They were immediately isolated, and the remainder of the inmates of the ward were vaccinated by the injection of three doses of pertussis vaccine made at the Bureau of Laboratories, Department of Health, New York. About ten days later, we had an epidemic of coughs in that ward. However, of thirty-six children that were inoculated only three developed the whoop, and even in these three the paroxysms were mild and lasted a very short time. The remaining children had only a mild catarrhal cough which subsided in about a week. In my opinion, these children had suffered an epidemic of whooping cough, which had been modified by the previous inoculations of pertussis vaccine. Furthermore, no other cases developed anywhere in the institution.

As to dosage, we usually start with about 500 million and double the dosage on three successive injections. We aim to produce a local reaction and try to avoid a systemic reaction. We had given as much as 15 billion to one man, aged twenty-five years, who had typical paroxysms.

As to the value of individual vaccines, we found that some strains were effective and some were not. Dr Williams, who has long been working on this subject at the Laboratory of the Health Department, would give us vaccines of unknown worth and would ask us to determine which of them were of value.

As to the effect of vaccines, we found that if the case was going to improve under this form of treatment, we would observe a favorable response after two or three injections. This response was characterized by a diminution of frequency of paroxysms and many times by the increase in the intensity thereof. Mothers would report that they had slept the night through for the first time in a week or more. Some cases were very refractory no matter how much vaccine was given to them. Some chronic cases that had been coughing for several months would show remarkable improvement after one injection. In our opinion, treatment of whooping cough by pertussis vaccine is, up to the present time, the most valuable method of treating this terrible disease.

DR T WOOD CLARKE, Utica. I would like to ask one question though I am very thoroughly convinced of the value of these vaccines. I would like to ask if any one has found out how long the immunity is going to last? From what we have heard it seems that this point is not definitely settled.

DR HENRY L K SHAW, Albany. I began the use of these vaccines with a great deal of skepticism. A representative physician succeeded in getting me to promise to give them a trial. I decided to give them a trial and after the first epidemic of whooping cough I was convinced of their value.

As to the length of time of the immunity, I do not think we know anything about it. I think, however, that the immunity is very short. We now take no chances, we isolate a baby that develops the disease and we vaccinate all the others. In time of an epidemic before we vaccinated about 80 per cent of the children who had not had the disease came down with it, and since we have used the vaccines about 7 per cent contract the disease. The mortality has also fallen very much and we no longer dread the disease as we formerly did. I can most earnestly recommend the vaccines. They are not a perfect cure but at the present time they are the best thing we have.

Dr Goler has been using these vaccines in Rochester and when I decided to write this paper I intended writing to him and getting his experience, but was informed that he intended to write a paper on the same subject. Dr Goler is going to give his paper from the public health point of view. In this line he has been initiating a striking campaign. He puts notices in the newspaper urging people to take advantage of the opportunity offered to be vaccinated against whooping cough free of charge.

## INDICANURIA IN CHILDREN

By WILLIAM J SCHUYLER, M.D.,

UTICA, N. Y.

THE more the general practitioner sees of the disorders of childhood the more he is led to believe that after all, children are not so unlike grown-ups from many points of view, and that the same general rule very often applies fairly well to both.

During the past few years, the writer has been impressed by the frequency with which the finding of so-called indican in the urine seems to be associated with many of the ills and maladies of the growing child, many of these ailments being rather obscure as to their underlying cause, or as to how much is cause, and how much effect in a given case.

Within easy recollection the profession has been regaled with many and various etiological entities at varying periods. Arsenical poisoning from green wallpaper held its ground well in one of the large eastern cities and vicinity some years ago, and almost every case of obscure departure from health was carefully examined with a view of finding this agent as a possible cause. Tonsils, altered, enlarged or cryptic, were given almost a free field for a considerable period and were removed partially or wholly by operation for the relief of a great variety of conditions.

Adenoids came along, and in children especially were found to be the one condition at the bottom of most of their troubles. Suppurative processes about the necks and roots of teeth followed in due time and many striking instances of relief were observed after thorough and conscientious treatment of this condition by capable dentists. Involvement of the appendix during or soon following an acute attack of tonsil infection was observed, and the relationship between the two conditions studied and discussed from various angles. And so it has gone, from one thing to another until the medicine man wonders why all these things have to be, and why children are the victims in one form or another of so many of the ailments that seem naturally to belong to the adult.

Indoxyl potassium sulphate, or indican as it is generally termed is said by competent authorities to be indol absorbed from the intestinal tract, changed in the liver into the above-named substance, an ethereal sulphate, and finally excreted in the urine.

The tests for indican in the urine are simple and fairly accurate and need not be dwelt upon at this time, it being sufficient to say that the amount as indicated by the test varies

from a faint trace through about five divisions of the color scale, to a degree in which the blue color is almost black. The presence of more than a trace of indican in the urine is an indication of a morbid condition, which if neglected or allowed to go unmanaged may eventually lead to disastrous results, either in the growing child or to form the basis of a body habit that in later years will be found responsible for those cardio-vascular and renal changes that tend to premature old age or to actually shorten life by many years. That this habit of body not infrequently begins in childhood, is to the writer's mind a definite and well-established fact and he believes this statement can be proved to the satisfaction of any practitioner of medicine whose field includes largely the care and oversight of children.

In this paper, the indicanuria due to tuberculosis or to pus forming processes such as empyema, is not included, but has to do with that type which results from marked putrefactive changes of the proteid contents of the intestinal tract through the action of bacteria.

The first case of the writer's bringing this question to prominence was that of a child about four years of age who had been the victim for a year or more of prolonged attacks of vomiting accompanied by marked prostration. These attacks would undoubtedly have been considered that of cyclic vomiting and the duration—usually from four to five or six days—left the child in rather an alarming state. Investigation showed the presence of indican in the urine in large amount. In addition to this the oxalates in the form of oxalate of lime crystals were found in excess. There was no trace of albumen or sugar.

Another child about six years of age was brought to the writer on account of repeated attacks of bronchial asthma, the condition at the time being in no respect different from that found in the adult. Here again was the urine found loaded with indican. This child in addition showed some tonsil change and was later operated, but not until marked improvement had followed the correcting of the intestinal condition.

Still another child, aged about two years suffered with severe attacks of bronchial asthma, and much the same underlying conditions were found except that in this instance, biurate of soda was crystallized out of the specimen in large amount. Complete relief followed the correction of the intestinal putrefactive tendency, and the child began to improve in general health and showed a more rapid gain in weight.

Holt, quoting Herter, makes the following statement in regard to indicanuria in children: "It is found in chronic intestinal indigestion,

\* Read at the Annual Meeting of the Medical Society of the State of New York at Utica April 24, 1917.

in very many cases of chronic constipation, in many cases of epilepsy, just about the time of the seizures, frequently in children who are the subjects of night terrors, and in whom there are usually disturbances of digestion. According to other observers, it is found with great constancy in acute putrefactive diarrhoeas."

The two chief preliminary conditions favorable to the development of indicanuria seem to be the ingestion of food proteids, especially that found in meat, in excess of the body requirement, and the presence in the intestinal tract of germ life which has the effect of producing putrefactive change in this proteid content. What this particular germ life is, or whether it is an aggregation of several types I am not prepared to say, nor does there seem to be much that has been written on this point. The colon bacillus seems to be considered practically innocuous so long as it remains in its normal habitat and can hardly be considered as being definitely responsible.

The question as to how and when this morbid germ life finds its way into a child's digestive apparatus is an interesting one and not altogether clear. Possibly the swallowing of infected mucus from the nose, throat or bronchial tubes may start the process going, or the same thing happen from decaying or infected teeth or from some morbid tonsil condition. Improperly prepared food, or food which is unsuitable and difficult of digestion may be the purveyor of bacteria of putrefaction.

Children who show a more or less constant tendency to indicanuria are very seldom entirely well. There will be something which will indicate a departure from the normal. These children often seem nervously irritable, and prone to outbursts of temper. They are often fickle in appetite and crave foods that belong properly only to adults. The circulation of the child who is toxic with this agent never seems quite free or perfect for the pink color on pressure over the finger nail will be found slow in returning.

The oxygen carrying capacity of the blood seems considerably diminished and these children will often be found sufferers from cold extremities. After some time a condition of anaemia of simple type will be found to exist and in this state the hematocrit will often be followed by marked improvement. The blood current at this stage of the trouble will be found to be below normal and the sphygmomanometer will usually show a lowered arterial systolic pressure.

The mucous membranes of the indicanuric child seem much more susceptible to outside

influences and germ infections, they are constantly taking cold, with long continued nasal hypersecretion or intractable throat or bronchial cough. They often complain of rheumatoid pain and soreness, and it is a question if the so called growing pains of childhood are not at least indirectly due to this underlying cause. Here again the question of cause and effect comes up, and the susceptibility to tonsil infection, adenoid change, eustachian and middle ear infection with mastoid involvement may easily be one of the disastrous effects. How do we know but what the child toxic with indican, is the one who shows the marked inability to resist the virus of epidemic poliomyelitis? Other acute infections of childhood may easily be influenced by the same morbid blood condition, and the question of susceptibility or non-susceptibility may depend largely on the existence of non-existence of indican in the child's urine.

It must be admitted that in many instances these children show so little of anything wrong or give tangible evidence of illness, that the advice of the physician is not considered essential and nothing is done to correct the trouble. These are the cases that drift along, never quite well, perhaps never really ill, until reaching adult life they begin sooner or later to show evidence of circulatory change of a different type. The heart sounds will begin to show some alteration in their normal characteristics, the second valve sound accentuated, the first sound irritable and tense. The radicals will begin after a time to be palpable under the examining finger and the Tykos or other instrument used will now indicate a blood pressure with a rising tendency. At this time or later, traces of albumen may be found in the urine, and an occasional tube cast be discovered under the microscope. The victim may be conscious of a slight dyspnoea with an occasional sensation of vertigo. Not a few of these cases will show gouty deposits about the small joints or gouty nodes about the scalp, ear or other favorite points.

From this time on the picture is one with which all medical men are familiar. The oculist will find evidence of arterial change in the deeper structures of the eye, while the ear specialist may be consulted on account of adventitious sounds in that organ. Even at this time the interested party may not consider himself really ill, but the life insurance company either declines him, or rates him up many years in advance of his age, for his days are not as long upon the earth as those of the man, who from his childhood up was free from the presence of indoxyl potassium sulphate in his urine.

*Discussion*

DR. WALTER LESLIE CARR, New York City, I have been over the records of fifty children who have had various nervous manifestations and I found only one having indican in the urine. The general condition as described in the paper is much as one sees it. The fault seems to lie with the protein and especially the protein of meat. If one looks back into the family history of these children he finds a tendency to lithemia, the so-called gouty diathesis, which leads later to changes in the arteries, joints and various tissues. It is therefore not only the food that is at fault in these patients, but predisposition or susceptibility. These children are irritable, have headaches, neuralgia, poor circulation, etc., and we cannot overcome their susceptibility all at once. This is the condition to which we have given the term auto-intoxication, and improper feeding adds to the trouble. Meat protein must be discarded and we must take care that these children get sufficient exercise and that attention is paid to hygiene. Young children who are started on a quantity of meat beyond their ability to digest usually improve when meat is discontinued. These children should be put on a vegetable diet, sleep out of doors and live out of doors. We should use our efforts to have them get all the oxygen possible.

With reference to adenoids and indicanuria, the question is which is the cause and which the effect. All children with indican are especially susceptible to infections by reason of low resistance. If the adenoids are removed we lessen the susceptibility of the child by increasing the amount of air he gets and also by lessening the dangers of infection.

Acute attacks of indicanuria are generally controlled. First, by colonic irrigations, second, by laxatives, particularly calomel, and third, by giving water freely. In the medicinal treatment the lactic acid bacilli give some aid. The bacilli in pure culture are the most satisfactory. Whether the results obtained are permanent depends on the after-treatment. There is no use giving the lactic acid bacilli and then going back to a faulty diet. This treatment is useful simply to reinstate the intestinal digestion and then detailed attention should be given to hygiene, diet, out-door life, etc.

Reference has been made as to the possibility of indicanuria being a predisposing factor in poliomyelitis. In a study of sixty cases of poliomyelitis I have no record that indican was present.

In a number of cases in which indican is present we have also an acetoneuria. In connection with cyclic vomiting we do not always find indican, but we may find indican at one examination and at a second examination we

may find acetone. The whole condition is a metabolic disturbance and if we place these children on proper diet and give them out-door life little medication is needed, provided they have had local treatment, such as the removal of adenoids and tonsils, and measures are instituted to increase general nutrition.

DR. ELIAS H. BARTLEY, Brooklyn. Dr. Schuyler has introduced a subject which is not very easy to discuss as Dr. Carr has suggested. It is a subject that can be looked at in several different directions. Indicanuria in young babies is always abnormal. In looking over the records of 400 examinations of the urines of young babies, Rouse, six or eight years ago, found that there was never any indican on the first day after birth, on the second day, rarely, on the third day quite frequently, on the eighth or ninth day never, unless there was a gastrointestinal infection. The intestinal tract in the new-born baby was practically in an aseptic condition, which it loses a very few hours after birth, and in the course of twenty-four hours, even if a child be given only sterile food, there is an infection of the gastrointestinal canal. On the third day we frequently have an inanition fever, there is decomposition of the child's own tissues for the production of heat and energy, and we frequently have a slight elevation of temperature at this time, and also the appearance of indicanuria. The question comes up whether this comes from the meconium and the secretions of the intestinal canal, or whether it is parenteral, that is, due to the decomposition of the child's own tissues. This brings in a new element as the possible source of the indican. It is the consensus of opinion that indol is the result of decomposition of cleavage of proteins under the influence of bacteria. These changes may not be confined to the intestinal canal, but may be found in other conditions, as in pelvic abscess, empyema, etc., which form the basis for the development of more or less indican and phenol sulphate. But we have usually been limited in our discussion to indican from the intestinal canal. As indican is the result of the decomposition of protein, it comes down to a bacterial infection of the gastrointestinal canal. It is only pathological when it is due to an overgrowth of bacteria. There is therefore only a small amount of indican in normal conditions. But when it is excessive there are also other toxic cleavage products produced.

Animal proteins are also more prone to decompose and produce indol than vegetable proteins, and there are also larger amounts of indican produced when there is retardation or stasis of food in the stomach or intestinal canal. These are the cases in which one finds a chronic putrefactive decomposition, and looked at from that standpoint, indicanuria is simply a phase of intestinal indigestion, and chronic intestinal in-

digestion and chronic indicanuria, are simply a play on words, but each name gives a different view of the same thing

As has been said there may be a variety of toxins produced, and the question comes up whether the indicanuria is due to toxins purely or whether it is due to reflex irritation. Suppose a child mashes a banana and swallows it and produces a convulsion and we examine the urine and find indican, was that child poisoned by the indican or was the convulsion due to reflex irritation from the banana or something else? Again, was the convulsion the effect or the cause of the indican in the urine? I will not pretend to answer. But some of the worst cases of indicanuria I have seen have been after epileptic convulsions or profound nervous disturbances. In these cases is the indicanuria due to putrefactive changes in the intestinal canal? Some cases are acute and some cases are long continued, but over-feeding with proteins and lack of exercise, infections of the gastrointestinal canal, or defects in the digestive enzymes seems to be the underlying cause.

Dr Carr has spoken of a predisposition to indicanuria in certain families. I have found the mother rather than the father responsible, and have put it down to infection, as she handles the child, its food, etc. Sometimes two or three children in the same family may be affected in the same way, and here we go back to a chronic intestinal infection.

Another question that comes up is that indican is not always produced in these cases of indigestion, sometimes we may find indigo blue and sometimes indigo red or scatol, instead of the indigo blue. The chloroform test does not distinguish between these two products, so I use a modified test omitting the chloroform. I take hydrochloric acid and urine in equal amounts and then run into the top of the fluid one or two drops of chlorinated soda solution. The chlorinated soda will float and you get a blue or red color as the case may be. This test I find more reliable than the test with the chloroform, the chlorinated soda may bleach the blue color after it has been formed if the reagent is a little in excess.

As to the matter of treatment, one point occurred to me as Dr Carr was speaking and that was that Dr Hare once remarked that the only intestinal antiseptic is normal intestinal peristalsis, if this cannot be obtained by hygiene and diet then it must be obtained by laxatives.

DR FLORENCE I. STAUNTON, Utica. I think Dr Schuyler's very serious and terrifying description has convinced us of the importance of this subject. Most of these children with acute attacks of indicanuria show such very bad symptoms, and yet it is so very easy to cure

them that we all like to get these cases. In which we get such brilliant results by the use of orange juice and receive a great deal of credit where none is due. It is very much the same in indicanuria. If we are called to see a child with night terrors, who is irritable and peevish, and cannot eat and these symptoms are due to indicanuria it is a very simple thing to restore that child to health. As a matter of diplomacy, since parents often resent being told that they are overfeeding their children, when you are called to a case and see symptoms indicative of indicanuria, it is better to take a specimen of urine for examination and not to give your diagnosis to the parents until you have the evidence of the urinary examination, as they will then be more willing to accept your statement with regard to the overfeeding.

DR A. L. BENEDICT, Buffalo. I am reminded of the remark of an intelligent layman as to the lack of odor of a child's body, and I sometimes wonder whether this may not be accounted for by the fact that there is a greater intrinsic antiseptic action in early life.

With regard to preterrene source of the indican I am rather skeptical. Where we find a decomposition of surgical products as in mastoid disease, appendiceal inflammation, abscesses, or empyema, we find we do not usually get indican in the urine, and while cases are reported, they are often plainly due to intestinal putrefaction co-existing.

As to the familiar tendency, where we see this condition running through a family we cannot say whether it is a family tendency or whether it is due to a common fault in diet.

The question as to the red and blue indican is very interesting. A few years ago I studied this subject and thought I knew something about it. I then heard Dr Blackader read a paper on this subject and I concluded that I did not know anything at all. I feel that what we think we know will all have to be revised. There is one inconsistency and that is in the comparison of the tests for indol in the faeces and for indican in the urine. In marked intestinal putrefaction, these correspond as they theoretically should but, while the indol test is more direct, that for indican is more delicate. Hence, often one finds the test for indol negative and that for indican positive. On the other hand one may find indol in a sample of faeces, whereas the urine passed at the same time is negative as to indican, for the reason that the absorbed indol, converted into indican, has passed off in the urine some hours previously. It is possible, also, that there are more or less pathologic factors which prevent the absorption of indol

or its excretion as indican, or which determine a re-excretion by way of the bowel instead of the kidneys

Until a few years ago I found indican very frequently, but during the past year I have found it very rarely. I thought that this might be accounted for by some fault in my reagents, but tests showed nothing wrong with the reagents. This fact may possibly be accounted for by economic conditions which force people to eat less meat protein than formerly.

DR JOSEPH R. WISEMAN, Syracuse. I am interested in indicanuria from the standpoint of the general practitioner, I always feel that it is a very puzzling subject and one about which there is much to learn. The appearance of indican in the urine is only an index of something abnormal, but I do not believe that the occurrence of indican *per se* is a symptom of great moment. I cannot subscribe to the statement made in the paper that advanced arteriosclerosis originates in indicanuria. In a number of cases of cardiovascular disease tested for indican I have been surprised to find the chloroform as white as in the urine of young babies, and I may say that I have seldom found indican in these advanced cases. The finding of indican indicates that the patient should be treated, but I think its importance has been exaggerated and that it does not do as much harm as we have thought.

I have found that the average specimen of urine shows more indican in hot weather than in the winter, whether this is due to a greater amount of putrefaction going on in hot weather is a subject that needs more study. Personally I do not believe that heart and kidney diseases may be traced to intestinal putrefaction alone, but I believe that there are a number of other causes at work.

DR ABRAHAM JACOBI, New York. I have heard much about indican and I cannot add to the large number of things we have been told.

I will say a word in reference to the statement made by one of the speakers, that he found more indican in the urine in the summer than in the winter. The digestion is very much less active in summer than in winter both in children and adults and both children and adults eat too much in hot weather. I believe, moreover, that indican is in 49 out of 50 cases the result of indigestion. We have, as has been stated, too much meat feeding and I will add that you have too much pure milk feeding. In pure milk feeding there is, however, not so much danger as in meat feeding. Still I never give whole milk to infants or children, and I believe I may not have seen so much indican as others. I never give much

pure milk to adults without the addition of some cereal decoction or some salt (Natl). I have not seen indican in a great many instances but where I do see it it is the result of indigestion, and therefore these patients get well rapidly if they are temporarily starved or the diet changed. Stop meat and pure milk.

The reader of the paper had every reason to be satisfied with the extent of the discussion. You have had a very successful and protracted meeting.

DR SCHUYLER, Utica. I took indicanuria as a type of toxemia, a factor in the production of many morbid results not attributable to this one thing alone. I realize the attitude of the general practitioner, and that there are many things with reference to indicanuria that we do not understand, but this substance is found in so many instances in which there are other signs of departure from health that we must conclude that it has some significance. Where we find changes in the heart and blood vessels it is difficult to say whether these are the cause of disturbed metabolism or whether the disturbed metabolism has caused the changes in the heart and blood vessels.

## LARYNGOTOMY IN CHILDREN.\*

By JAMES F. McCAW, M.D.,  
WATERTOWN, N. Y.

UNDER certain circumstances laryngotomy in children is justifiable. While the operative procedure is no more difficult than in the adult the all important after-care gives us many anxious moments. One of the circumstances which might make this operation in children imperative was encountered by the writer in the case here reported.

Clara A., age five years, was brought to me October 6, 1916, for marked obstruction to breathing. There was evidence of fast approaching cyanosis. Upon examination it was found that the obstruction was laryngeal, inspiration was less obstructed than expiration. The immediate indication was to give this little one air. She was sent to the hospital and a low tracheotomy was done. A thorough examination at this time revealed the presence of a Papilloma quite well filling the larynx below the vocal cords. The exact point of attachment could not be definitely determined. It was decided to put the larynx at rest by allowing the child to wear the tracheotomy tube for some time with a hope that a subsidence of the growth might occur. This was done and the tube was allowed to remain for five months. During this period frequent examinations demonstrated the fact that

\* Read at the Annual Meeting of the Medical Society of the State of New York at Utica, April 26, 1917.

the growth instead of diminishing in size was producing at the end of this period complete obstruction. Now the question arose—what was to be done? It was decided that two courses were open, either to allow her to continue to wear her tracheal tube indefinitely or attack the larynx by some operative procedure for the removal of the growth which was now completely obstructing respiration by the normal method. Now the circumstances arose which I consider justifies this procedure in children for the removal of benign neoplasms. The writer not having a suspension apparatus and the patient's financial condition was such that she could not be taken elsewhere, with no question as to the necessity of relief for the patient, it was decided that laryngotomy would be the best procedure under the existing conditions. After thoroughly explaining the situation to the parents with all the possibilities, the patient was sent to the hospital and on March 7, 1917, a laryngotomy was done following out the suggestions laid down by Chavaler Jackson. The Trendelenburg Rose position was used which prevents blood and secretions from entering the lungs, very light anaesthesia so as to return the tracheal reflex as a safeguard against septic or foreign body pneumonia. The usual median incision from the hyoid bone to the old tracheal wound was made, the trachea incised, and the larynx split from below. As the thyroid cartilages were opened this papillomatous growth which I show you burst into the wound, just as a sponge would do when relieved of pressure confining it. The growth was sessile, attached to the under surface of the left vocal cord and filled the entire cavity of the larynx. It was quickly removed with a pair of small scissors. The tracheotomy tube was left out and no attempt was made to close the wound but it was lightly packed with sterile gauze wrung out of mercuric chloride 1-10,000. These dressings were changed every three hours for the first five days when the intervals were prolonged. Aside from a rapid pulse rate for forty-eight hours following the operation this patient made an uneventful recovery. Was out of bed on the fifth day running around the ward at the end of the first week and the wound practically healed in two and a half weeks and discharged from the hospital three weeks from the date of operation. The post-operative care of these cases is most exacting, especially for the first four or five days until the patient can swallow without difficulty. Every article of diet and utensils containing it must be absolutely sterile to guard against infecting the wound by leakage, the importance of which was demonstrated twice in this case by leakage through the wound of milk and cocoa on different occasions.

This paper is written with the idea of calling attention to the fact that under certain circumstances, such as those recorded above, thyrotomy

for the removal of benign neoplasms in children becomes a necessity, is justifiable and should be done. We realize fully that direct laryngoscopy is the method of election, but where this cannot be accomplished, and there is an imperative demand for relief, then we are not doing our duty unless we give the patient the benefit of the best means of relief which is left. In children, mortality is the question which deserves our serious consideration for they are not amenable to reason, their judgment is poor and fight against everything done for them in the after-care which necessarily makes the work more strenuous and increases the possibility of secondary complications. Then again, children do not seem to resist major operative procedures so well as adults. So far as the functional results are concerned, I am not prepared to say, that aside from external scar, they are any better in patients operated upon by direct laryngoscopy than a carefully performed laryngotomy, but the dangers surrounding the latter are as I have said before, many fold greater.

#### CONCLUSIONS

First—That under certain circumstances laryngotomy becomes necessary and justifiable in children, these circumstances may vary but may be just as imperative as in the above recorded case.

Second—Although the pre-operative and post-operative care is most exacting and difficult of carrying out, the mortality higher than in the direct method, this should not deter us from doing our duty when occasion demands it.

Third—The writer is not prepared to say that the functional results from the direct method are much better than a carefully performed thyrotomy.

Fourth—The arguments against it are the high mortality, the presence of an external scar, and the prolonged and exacting post-operative care, but even these should not mitigate against it where necessity demands it.

#### Discussion

DR JOHN D KERNAN, of New York. I think that the greatest dangers of thyrotomy arise not when the patient is on the table but in the post operative period, from pneumonia and so forth. Many of these dangers may be avoided by passing a tube through the nose and leaving it there for weeks at a time. Thus the dangers from aspiration of food or water may be avoided. After all, the operation covers a very narrow field because there are so many risks, immediate on the table and remote from injuries to the vocal cords and cartilages. Dr Lynch has shown these dangers in pictures of cases after thyrotomy. Dr McCaw may be

trusted and is able to judge of the limitations of this work, but others might not be so trusted.

In connection with laryngotomy in children there are three classes of cases to be considered. First, tumors, second, impacted foreign bodies, and third, stenosis of the larynx from the presence of inflammatory tissues. These are the very cases which are benefitted by the methods described by Dr. Lynah and Dr. Murphy this morning. The results are good.

It is well to remember that these operations in young children can be done without the use of an anesthetic, also the suspension method may be used. In stenosis of the larynx where other methods are unavailing, Dr. Lynah's method is applicable. It is only when all these have failed that thyrotomy should be employed.

I think the crux of the whole discussion is this. This is no place to congratulate Dr. McCaw upon his result in this particular case but to impress upon the specialist the importance of perfecting the technic in suspension and the other direct procedures mentioned. What Dr. McCaw has said sets a bad example for the younger men. We should urge the perfection of the direct technic upon the young men of our specialty for use when they come up against this class of cases. Dr. McCaw is awake to the beauties of the direct methods but I fear that others may not be. Dr. Yankauer has hitherto been like the "voice that cries in the wilderness." If we all insist upon the use of the direct methods, there would be trained in every small town two or more men to employ these methods and patients would be sent to the doctor sooner than they are now sent.

DR. JOHN WESLEY MURPHY, of Cincinnati. I wish to congratulate Dr. McCaw on the success he has had with these cases of laryngotomy in children. I think he is perfectly justified in doing what he did. A child should not be sent away because one believed there was no chance for it to survive. In doing the operation for papilloma by the direct method I believe that one must be prepared for a hasty tracheotomy. There are some cases in which if the larynx is touched there is a spasm and the patient is threatened with asphyxia and so one should be always prepared to do a hasty tracheotomy. I think that the direct method is the one of choice when one is prepared for it in cases of papilloma.

DR. JAMES F. McCAW, of Watertown. I wish to thank the gentlemen for their kind remarks. In my paper I started out with the remark that under certain circumstances thyrotomy in children was justifiable and I still hold to that position in the treatment of these cases in

young children. The direct method is the one of election, but there are cases that cannot be treated by this method and in such we have to resort to other means, then thyrotomy is the only method left. I called attention to the disadvantages of this method and am not advocating it as a method of choice but the one of last resort.

## THE SURGERY OF SPLENIC ANEMIA

By G. W. COTTIS, M.D., F.A.C.S.,

JAMESTOWN, N. Y.

THE interest in the surgery of the anemias lies not so much in operative technique as in the indications for, and limitations of, surgical treatment. Until we know more of the relation of the spleen to the various types of anemia, our surgery must be largely empirical. The known facts of splenic physiology and of the pathology underlying the anemias are scattered and incoherent. It is the purpose of this paper to consider the available data with special reference to those cases which have heretofore been loosely grouped under the name of primary splenic anemia.

Clinically it is convenient to consider this as an entity, although it is really a symptom-complex. The essential features are great enlargement of the spleen followed by a characteristic type of anemia and a chronic course ending in death. The anemia consists in a diminution in the amount of hemoglobin, always out of proportion to the decrease in the red blood cells. The latter are moderately decreased in most cases but may be normal or even increased to above normal. The color index is lower than in any other disease. The leucocyte count is practically always below normal and may fall as low as one thousand to the cu. mm.

No such uniformity is found in the pathology. In the type described by Banti there is a great increase in the connective tissue with atrophy and sclerosis of the pulp, and malpighian bodies. In the Gaucher type, the enlargement of the spleen is due to masses of large endothelial cells, replacing the normal tissues. Gaucher described the condition as an endothelial sarcoma. Wilson<sup>1</sup> reports two cases with diffuse lymphoid proliferation, resembling lymphosarcoma. The case whose report is appended to this paper clinically resembled Banti's disease, but the large spleen was composed almost entirely of tubercles, hardly any splenic tissue remaining. The anemias accompanying syphilitic and malarial enlargements of the spleen may be indistinguishable from that of primary splenic anemia.

<sup>1</sup>Read at the Annual Meeting of the Medical Society of the State of New York, at Saratoga Springs, May 16, 1916.

How are we to account for such uniformity in the symptoms and blood-picture with such diversity in the underlying pathology? It is evident that whatever the ultimate cause may be it acts chiefly upon the white blood cells and the hemoglobin metabolism. This view is supported by an analysis of the blood changes in the cases cured by splenectomy. In a series of cases reported from the Mayo clinic the blood findings at the time of operation and also five months to seven years after the operation are given with reference to the hemoglobin in 11 cases and for the red and white cell counts in 9 cases. A comparison of the figures before operation with the latest figures reported after operation shows that the hemoglobin was increased 55.2 per cent, the white cells 123 per cent, while the red cells were increased only 5 per cent. This seems to indicate that the disease has little to do with either the production of new red cells in the marrow or their destruction in the spleen and liver. Nevertheless the spleen must be the chief factor in producing the blood changes, for the splenomegaly always precedes the anemia, and removal of the spleen is followed by complete recovery. It is necessary therefore to consider the normal functions of the spleen and its relation to the blood.

This relation is not a simple one. On the contrary, modern research has tended to show a complex interrelation between the spleen, the liver and the bone marrow. Acting as a single hemolymphatic system, these three organs control the formation of the blood cells, collect and break up the worn out cells and convert the broken down material into a form in which it is stored up and utilized in the formation of new cells. The exact part played respectively by the spleen, liver and marrow is not yet known, but certain general conclusions are justifiable.

The spleen is a huge lymph gland to the blood acting like other lymph glands as a filter, extracting from the blood foreign bodies, worn-out blood cells, bacteria and red blood cells invaded by parasites. Not only does it filter out these materials but it seems to have the remarkable power of attracting them to itself so that it does not depend on the chance of their being carried through it in the circulating blood. This power is well shown in the cases of so-called latent malaria where without any clinical symptoms and no history of malarial infection and with parasites entirely absent in the peripheral circulation the spleen is found to contain large numbers of red blood cells containing malarial parasites. "The entire human cycle of the parasite can be followed in the spleen when no parasites are demonstrable elsewhere in the body."

Having collected the worn-out and the diseased blood cells, the spleen prepares them for the conversion of the hemoglobin into bilirubin. The actual change occurs in the liver, in the Kupfer

cells, but only in blood which has passed through the spleen.

Asher & Ebner<sup>4</sup> have recently shown that liver extracts have a decided hemolytic action while splenic extracts, though they may act hemolytically, do not act constantly or strongly in this way. When the liver and spleen extracts are combined, hemolysis is far more active than it ever is in the absence of the splenic constituents. That is, spleen extracts augment the lytic action of liver extracts and only spleen extracts will act in this way. Other organ extracts are inactive.

The spleen is the organ of iron metabolism. It contains free iron. Normal animals do not become anemic on a diet low in iron, while splenectomized animals do. The spleen is responsible for the fact that there is always material for the formation of hemoglobin. According to Asher the excretion of iron from the body is increased after splenectomy. This, however, is denied by Austin and Pearce.<sup>5</sup>

There must be some mechanism for maintaining a constant relation between blood destruction and blood formation. It is highly probable that in the spleen hormones are formed which regulate the activity of the red bone marrow.<sup>6</sup>

There is reason to believe that the production of these hormones is dependent upon the destruction of red blood cells. For instance, if anemia be produced by the use of a hemolytic poison there follows a greater production of red cells than is found after a hemorrhage producing an equal grade of anemia.<sup>7</sup> This can only be explained by supposing that the bone marrow is stimulated by the products of the breaking down of the red blood cells, while this stimulation is lacking when the red cells are lost by hemorrhage. It may be that the organic iron compounds resulting from the destruction of the red cells has a relation to the spleen analogous to that of iodine to the thyroid.

Since the normal spleen is the chief organ of iron metabolism and plays an important part in the production of white cells it would seem that the essential cause of splenic anemia is a loss of function—hyposplenism. All the lesions previously described are destructive of the functioning tissue of the spleen. Experimental removal of the normal spleen produces a similar anemia, the loss in hemoglobin being greater than in the red blood cells.

But if the spleen has merely lost two, or more of its functions how does the removal of the defective organ effect a cure? I have met only one attempt to explain the curative effect of splenectomy in this disease. Hirschfeld<sup>8</sup> suggests that the blood-forming function of the marrow is inhibited by a toxin produced in the spleen and that splenectomy therefore, removes the cause of the disease. This theory is not in accord with the facts as we have just considered them, nor

with the ploycythemia sometimes present, nor with the diversity of the pathological changes in these spleens. If hyposplenism is the real cause of splenic anemia the cure by splenectomy may be explained in this way.

It is well known that after the loss of a normal spleen its functions are assumed by the bone marrow and lymph nodes and especially by the hemolymph nodes. These latter are in many respects miniature spleens having blood instead of lymph in their sinuses. As long as the spleen is present, even though some of its functions are not well performed, these accessory or vicarious spleens are not brought into play. The actual removal of the spleen causes them to assume its functions, and since they are not involved in the pathologic process that has crippled the spleen, they perform the work in a normal manner, just as they do after the loss of the normal spleen. The result is a restoration of the normal blood condition. Whether or not this hypothesis is correct, it is probable that the combination of splenomegaly with anemia and leucopenia constitutes a positive indication for surgical intervention.

Splenectomy is also indicated in hemolytic jaundice. This is a disease of young people, chronic and probably infectious in its nature. It is characterized by crises of fever with tenderness over the liver and spleen, a secondary anemia and a jaundice which is not accompanied by any symptoms of obstruction to the bile passages. Both the jaundice and the anemia result from hemolysis and the rapid conversion of hemoglobin into bilirubin. The fact that spleen extracts activate the hemolysin of the liver makes it probable that the cause of the disease is an over production of the activating hormone of the spleen as a result of some specific infection. The removal of the spleen is followed in these cases by prompt and permanent relief. W. J. Mayo<sup>9</sup> says that improvement is perceptible within twenty-four hours after operation.

Pernicious anemia probably does not belong to the class of diseases included by the title of this paper, but the favorable results obtained in many cases by the removal of the spleen justifies a brief consideration of it in this connection. The blood-picture in this disease presents a striking contrast to that of splenic anemia, the reduction in the number of red cells being proportionately much greater than the reduction of hemoglobin. That the immediate cause of the anemia is excessive destruction of red cells is evidenced by the presence of excessive amounts of iron in the liver,<sup>10</sup> by swollen hemolymph nodes, filled with phagocytes containing red cells and blood pigment,<sup>11</sup> and by the overstimulation of the red marrow, with the resultant appearance of immature cells in the blood stream.

Space does not permit even a mention of all the evidence pointing to a toxin, probably of in-

testinal origin, as the ultimate cause of the disease. Is has recently been well summarized by Vogel.<sup>12</sup> What concerns us chiefly is the part played by the spleen.

While in splenic anemia the changes in the spleen are always of a destructive nature, in pernicious anemia the functioning tissue is increased in amount. The spleen is seldom large enough to be palpated, but it is almost always larger than normal. It seems likely that the toxin, whatever it is, powerfully stimulates both the hemolymph nodes and the spleen. Hypersplenism should, theoretically, increase the fragility of the red cells, increase the hemolytic action of the liver, and furnish an extra amount of hemoglobin. A working hypothesis may be constructed that will meet most of the requirements.

A toxin, as yet not identified, acting upon the hemolymph nodes, spleen and liver, causes greatly increased destruction of red cells. As previously mentioned, the products of red cell destruction furnish a hormone which stimulates the red bone marrow to excessive activity. This leads to the production of immature cells (normo-blasts, Jolly-Howell bodies), which are abundantly supplied with hemoglobin through the overactivity of the iron-metabolic function of the spleen. When the activity of the marrow becomes great enough to more than compensate temporarily for the blood destruction, we have a remission, so characteristic of the disease.

It is true that Cabot<sup>13</sup> described the changes in the spleen as destructive, and says that very small spleens are the rule. This is only another example of the difference between dead and living pathology. His observations were necessarily made upon autopsy material, representing the terminal condition. Mayo<sup>9</sup> studying the spleens removed at operation finds exactly the opposite condition.

If the above hypothesis be approximately correct, it is evident that splenectomy may give great temporary improvement, by breaking the vicious circle, but since the operation does not remove the causative toxin, a cure should not be expected.

#### CONCLUSIONS

- 1 The spleen is an important organ of blood metabolism. Its functions are multiple, regulating the activity of red bone marrow, activating the hemolytic secretion of the liver, conserving the hemoglobin of broken down red cells, and assisting in the production of white blood cells.

- 2 The spleen is not indispensable, because its functions can be assumed by other organs of the hemolymph system.

- 3 A hemoglobin anemia may result from any one of a number of diseased conditions which produce enlargement of the spleen. The clinical picture may be the same, whether the pathology be splenitis of unknown origin, tumor formation, tuberculosis, syphilis or chronic malaria. In all

of these conditions the removal of the spleen is indicated as a curative procedure

4 Splenectomy for pernicious anemia is justifiable as being the best form of treatment yet offered, but probably will not result in permanent cure

5 Hemolytic jaundice is a positive indication for splenectomy and is always cured thereby

# CASE REPORT

Mrs N L referred by Dr Jane L Greeley Entered the W C A Hospital Sept 7, 1915

History Age, 48, married 31 years, 5 children, all living Has not been well since last child was born ten years ago Six years ago had iritis, the nature of which she does not know This recurred at intervals for three years During this time she had pruns in her neck and back, became very weak and has continued to be so Has never had any pulmonary symptoms Ten years ago weighed 200 pounds when she entered the hospital her weight was 125 Gives no history of gastric symptoms until the spring of 1915, when she developed discomfort in epigastrium immediately after eating, never vomited and never had attacks of acute pain During past two years has had some pains in the back, starting under left scapula and radiating around the left side of the body For three years has noticed slight yellow tinge to skin During the past year has become progressively weaker

Examination Female, somewhat emaciated, skin uniformly pigmented, patient markedly asthenic, being barely able to turn over in bed, heart and lungs negative, no lymph nodes palpable The abdomen presents a distinct fullness on left side, which palpation shows to be due to a much enlarged spleen, extending downward almost to the crest of the ilium and mesad to the midline Spleen slightly tender, liver dullness one inch below costal margin, temperature ranged from 98 to 100, pulse, 80 to 95

Blood Examination Hemoglobin, 45%, red blood cells, 5, 120,000, moderate poikilocytosis, platelets normal, Jolly-Howell bodies present White blood cells, 8,700, differential count (400 cells), polymorphs, 77%, small lymphocytes, 18.25%, large lymphocytes, 2.75%, transitionals, 1.50%, basophiles, 50%, eosinophiles, 0

A diagnosis of primary splenic anemia was made and operation advised

Operation, October 30, 1915, drop ether anesthesia Median incision from ensiform downward, about eight inches, large, firm, dark-red spleen delivered into wound Splenic veins very large and friable All vessels ligated with chromic gut and spleen removed There was no evidence of perisplenitis Intestines and mesenteric nodes appear normal, liver slightly large, surface smooth Gall bladder tightly contracted on a mass of gall stones Cystic duct ligated and

gall bladder removed without being opened The wound healed by primary intention, and convalescence was uneventful until November 19th, when the temperature rose to 100.4 and the patient developed burning pain in the stomach, emesis of sour fluid, and severe abdominal pruns These symptoms continued for one week, when they gradually subsided

Blood Examination, November 25th Hemoglobin, 55%, red cells, 5,500,000, leucocytes, 7,000, differential, normal

The patient left the hospital free from symptoms and with increasing strength and weight, and has continued to improve to the present time She is now doing her own housework

The association of gall stones with splenomegaly recalled the emphasis placed upon this point by the workers in the Mayo clinic, and we assumed a causal relationship The pathological report on the spleen, however, was as follows

"Sections of the spleen show innumerable tubercles In many areas the tubercles have fused and hardly any splenic tissue is to be found in the sections Here and there a Malpighian body is easily recognizable, but most of the splenic tissue has been replaced by tubercles There are many giant cells some of which contain tubercle bacilli There must be a primary focus somewhere, from which the spleen has received a shower of bacilli, for this is a regular miliary tuberculosis"

The gall bladder showed no microscopic evidence of tuberculosis A careful physical examination of the patient showed no evidence of tuberculosis elsewhere in the body

This case may properly be classed as one of primary tuberculosis of the spleen, in the sense not that the spleen is the portal of entry of the organism but that the disease process has localized itself in the spleen while the original focus may be healed entirely, that it represents a rare type is shown by an analysis of the cases collected by Winternitz (14) in a masterly review of the literature He was able to collect altogether fifty-one cases to which he added one of his own In 80 per cent of the cases in which the liver was examined it showed tuberculosis There was active pulmonary tuberculosis in 24 per cent Only one case showed the disease to be confined to the spleen, and in three cases only the spleen and liver were involved

A point of importance in differential diagnosis mentioned by Winternitz is well illustrated by this case, namely the very high red cell count Polycythemia may occur, however, in other conditions involving a massive destruction of the spleen

I wish to express my thanks to Dr Paul G Weston for the pathological examination of the spleen and to Dr F P Goodwin for the blood analysis

## REFERENCES

- 1 Wilson *Surg Gyn and Obst*, March, 1913
- 2 Giffin *Amer Journ Med Sci*, June, 1913
- 3 Craig Osler's "Modern Medicine," Vol I, p 413
- 4 Asher and Ebnother *Zentralb f Physiol*, 1915 (30), 61-64
- 5 Austin and Pearce *Jour, Exp Med*, XX, p 108
- 6 Herschfeld *Deutsch Med Wochshrift*, No 37-38, September, 1915
- 7 *Ibid*
- 8 *Ibid*
- 9 Mayo *Jour A M A*, LXVI, p 716
- 10 Hunter Quoted by Vogel *Jour A M A*, LXVI, p 1014
- 11 Warthin Osler's "Modern Medicine," Vol I, p 830
- 12 Vogel *Jour A M A*, LXVI, p 1012
- 13 Cabot Osler's "Modern Medicine," Vol IV, p 619
- 14 Winternitz *Archives Int Med*, Vol IX, p 680

## OPERATIVE OBSTETRICS \*

By IRVING W POTTER, M D,  
BUFFALO, N Y

FOR all practical purposes obstetric operations may be classified as follows

- 1 Forceps deliveries
- 2 Version
- 3 Version and extraction
- 4 Forceps applied to the after coming head
- 5 Craniotomy
- 6 Embryotomy
- 7 Vaginal Cesarean section
- 8 Abdominal Cesarean section

The application of forceps is the operation most often resorted to and probably more damage is done by their use than is generally admitted. Forceps are many times applied to the sides of the pelvis, without any regard to the position of the head thereby doing untold injury to the child as well as the soft parts of the mother.

Forceps should never be applied until the cervix is fully dilated and head in the proper position. In my judgment forceps should never be used to rotate the head, in cases where it is necessary to change the position of the head before applying the instruments, the head should be rotated manually, under anaesthesia and the forceps then applied. It has always seemed to me that the obstetric forceps were too heavy and too long. For that reason I use a short forcep thereby lessening the damage to the soft parts. The short forcep is also a decided advantage when it is necessary to apply them to the after-coming head, an operation which should be more generally understood. Forceps should never be applied to the breech, nor should a hook ever be used in the groin of a living child. In breech cases it is better to bring down one foot or both feet, so that the labor can be terminated quickly if the interests of the child or mother demand it.

Version is the operation that should be performed more often and the forceps should be used less. Forceps, however, should be used more often on the after coming head. A small hand and arm properly gloved, can be introduced into the uterus for diagnostic purposes and for the purpose of doing a version with less damage than the use of forceps. I have had my hand in the uterine cavity over one thousand times and I have yet to find any serious damage resulting therefrom, the same cannot be said, however, of the forceps.

Craniotomy, owing to advanced ideas, is rapidly becoming an operation of the past. It is only in cases where the child is known to be dead or in cases of hydrocephalus that the operation is to be considered, it may be performed either on the on-coming head or the after-coming head. The same apply to embryotomy which is justifiable in cases of locked twins or monstrosities.

This brings us to the consideration of two operations that have caused an endless amount of discussion both in and out of the profession, namely, vaginal and abdominal Cesarean section.

I maintain that any woman who cannot be delivered properly through the birth canal, is entitled to an abdominal Cesarean section provided she is in the hands of a competent man. At this point I want to make a plea for the more careful examination of the pregnant woman. It is surprising how little care a woman takes of herself or is given by her physician during her pregnancy. A patient is told to be as natural as possible and to report if any alarming or unusual symptoms manifest themselves in her particular case. That is wrong. She should be carefully watched so those symptoms, indicating trouble can be avoided. All women cannot work as hard when they are pregnant as at other times. Some do not eliminate as freely at that time. The pregnant woman should not motor for long distances for fear of loosening the placenta. Worry and care are to be avoided. Teeth should be in good condition for mastication. In fact all matters of detail should be carefully watched so any irregularities may be corrected. It is important that the kidneys and bowels perform their functions properly.

In vaginal Cesarean section we have a method whereby the uterus can be emptied rapidly without any special danger or shock to the patient. This applies to pregnancies between the third and seventh month. Before the third month the curette can be used, after the seventh or eighth month an abdominal operation is better. The indications for such a procedure are

- 1 Eclampsia
- 2 Central placenta prævia

\*Read at the Annual Meeting of the Eighth District Branch of the Medical Society of the State of New York, at Batavia, September 7, 1917

### 3 Accidental hemorrhage

### 4 Prolapsed cord

5 Dangerous heart conditions in mother and a few others as malignancy of cervix with hemorrhage, hydrotic mole, and advanced tuberculosis of mother. The dangers to the child in this operation are those from the conditions which demand interference, such as the toxemia or the fact that not enough room is given to deliver.

The dangers to the mother are injuries to the bladder, sepsis and hemorrhage. In 530 cases reported, Peterson found nine bladder injuries. The effect of the operation on succeeding childbirth is somewhat uncertain. I have a series of thirty-one cases of vaginal Cesarean section with no bad results.

Owing to the advance made in abdominal surgery abdominal Cesarean section will become popular as time goes on. What is necessary is to bring this matter before the general practitioner in such a manner as to make him aware of his responsibility. To also have him understand that obstetrics is surgery and every case should be treated as such. It is a great mistake to regard pregnancy as a physiological process and leave everything to nature. While meddling midwifery is not to be countenanced, I know from experience that many times a case is neglected for want of a thorough examination before delivery, even if chloroform anesthesia is necessary to do so. The teaching of non-interference, while it may be justifiable in some cases, is not in accordance with the progressive spirit of the times and is in a large measure responsible for the poor obstetrics of today.

The careful examination of and the early interference in our suspected cases will do away with many bad results. It is here that the family physician and the obstetrician must work together to obtain good results. Patients should be told that this operation is no longer an operation of last resort. For owing to the work of men like Dr. A. B. Davis, of New York, it is now classed among the elective operations and in early cases should have no mortality. The indications for this operation will always rest largely with the individual operator. Women who have had one or more still-born children following long labors should be given this opportunity of having a living child. Central placenta praevia in a primipara or in a multipara with a long thick cervix. Prolapsed cord with a similar cervix. Cases of eclampsia at or near term. Are all indications where this operation should be performed. The important point to remember is that the operation must be performed early and the results will be satisfactory. Pelvic measurements are rather unreliable as we are not able to measure the

thickness of the pelvic bones nor the size of the child's head, neither the degree of moulding that that head will undergo under pressure.

I can report a series of fifty-one consecutive abdominal Cesarean sections without a death. This series comprises both early and late. Cases seen with midwives and consultation with other physicians. Four of these cases were twin pregnancies. No children were delivered dead nor mutilated. I know of two cases that I operated on that have had living children through the birth canal since their operation. One was a case of central placenta praevia in a multipara, the other had a small baby through a contracted pelvis. That brings up the question as to whether or not a woman who has once had a Cesarean section should be allowed to go into labor, I should say not. Just a word as to the use of bags as dilators, also the induction of labor, before term in hopes of getting a small child through a small pelvis. Neither of these procedures, to my mind, are clean surgical operations, nor should they be considered as such.

It should be the aim of every operator to select the operation which has the least morbidity and the highest efficiency. I believe, for the conditions considered in this paper, that the high operation of abdominal Cesarean section is such an operation.

In the cases so far seen I have not found it necessary to go below the navel in any of them. No hernias have resulted from the operation. No injuries have resulted to the bowels in any case. In one patient I removed the appendix as well as resecting both tubes, using the same incision.

The vaginal Cesarean section is an operation that can be performed in an ordinary house as well as in a hospital.

For the abdominal Cesarean section a well-lighted clinic is better, although I can see no objections to doing this at home under proper conditions.

### CONCLUSIONS

- 1 More care should be given the pregnant woman
- 2 Interfere early in operative cases
- 3 No test of labor should be allowed when a Cesarean section is decided upon
- 4 Once having had a Cesarean section always have one
- 5 The high operation leaves the best abdominal wall
- 6 Simplest technique and the least possible disturbance of the abdominal contents
- 7 Avoid morphine before delivery of the child. One quarter grain of morphine may be given hypodermically after delivery while closing the abdomen.

## Legislative Notes

The Medical Society of the State of New York herewith presents the list of members of the Senate and Assembly for the year 1918. Members of the Society can refer to this list at any time that it may seem advisable to write to their Assemblymen or Senators in regard to legislative matters. All are requested to look it over so that if there are any known to them personally they can write to them, if requested, to assist or oppose any bills before the Legislature.

## SENATE

- 1 \*George L. Thompson, R., Kings Park
- 2 August Farrenkopf, D., Ridgewood

## KINGS

- 3 \*Thomas H. Cullen, D., 256 President St
- 4 \*Charles C. Lockwood, R., 954 Greene Ave
- 5 \*William J. Heffernan, D., 598 Fourth Ave
- 6 Charles F. Murphy, R., 292 Clinton Ave
- 7 \*Daniel J. Carroll, D., 135 N. 3rd St
- 8 \*Alvah W. Burlingame, Jr., R., 391 Fulton St
- 9 \*Robert R. Lawson, R., 24 Woodbine St
- 10 \*Alfred J. Gilchrist, R., 249 Crescent St

## NEW YORK

- 11 Bernard Downing, D., 195 Monroe St
- 12 Jacob Koenig, D., 220 E. 12th St
- 13 \*James J. Walker, D., 6 St. Luke's Pl
- 14 \*James A. Foley, D., 66 Broadway
- 15 \*John J. Boylan, D., 418 W. 51st St
- 16 \*Robert F. Wagner, D., 244 E. 86th St
- 17 Courtlandt Nicoll, R., 405 Park Ave
- 18 Albert Ottinger, R., 23 W. 75th St
- 19 Edward J. Dowling, D., 141 W. 131st St
- 20 Salvatore A. Cotillo, D., 235 E. 116th St
- 21 \*John J. Dunnigan, D., 1861 Holland Ave
- 22 John V. Sheridan, D., 3118 Webster Ave

## STATE.

- 23 \*George Cromwell, R., Dongan Hills, S. I
- 24 \*George A. Slater, R., Portchester
- 25 \*John D. Stivers, R., Middletown
- 26 \*James E. Towner, R., Towners
- 27 \*Charles W. Walton, R., Kingston
- 28 \*Henry M. Sage, R., Menands
- 29 \*George B. Wellington, R., 3 Walnut Pl., Troy
- 30 \*George H. Whitney, R., Mechanicville
- 31 James W. Yelverton, R., 217 Union St., Schenectady
- 32 Theodore D. Robinson, R., Mohawk, R. F. D. 1
- 33 \*James A. Emerson, R., Warrensburg
- 34 \*N. Monroe Marshall, R., Malone
- 35 \*Elon R. Brown, R., 262 Clinton St., Watertown
- 36 \*Charles W. Wicks, R., Sauquoit
- 37 Adon P. Brown, R., Leonardsville
- 38 \*J. Henry Walters, R., 935 University Bldg., Syracuse
- 39 \*William H. Hill, R., Lestershire
- 40 \*Charles J. Hewitt, R., Locke
- 41 \*Morris S. Halliday, R., 510 E. Seneca St., Ithaca
- 42 William A. Carson, R., Rushville
- 43 \*Charles D. Newton, R., Geneseo
- 44 John Knight, R., Arcade
- 45 \*G. F. Argetsinger, R., 683 Averill Ave., Rochester
- 46 \*John B. Mullan, R., 9 Elwood Bldg., Rochester
- 47 \*George F. Thompson, R., Middleport
- 48 Ross Graves, R., 68 Manchester Pl., Buffalo
- 49 \*Samuel J. Ramsperger, D., 232 Emslie St., Buffalo
- 50 Leonard W. H. Gibbs, R., 15 Depew Ave., Buffalo
- 51 J. Samuel Fowler, R., Jamestown

## ASSEMBLY

## ALBANY

- 1 \*Clarence F. Welsh, R., 43 S. Allen St., Albany
- 2 \*John G. Malone, R., 8 Wendell St., Albany
- 3 James M. Gaffers, R., Latham

## ALLEGANY

- \*William Duke, Jr., R., Wellsville

## BRONX

- 1 \*Earl H. Miller, D., 834 Eagle Ave
- 2 Edward J. Flynn, D., 29 Alexander Ave
- 3 B. Gitlow, S., 524 Wales Ave
- 4 S. Orr, S., 1389 Stebbins Ave
- 5 C. B. Garfinkle, S., 926 S. Boulevard
- 6 Thomas J. McDonald, D., 876 E. 224th St
- 7 Joseph V. McKee, D., 890 E. 176th St
- 8 J. Fairfax McLaughlin, D., 251 E. 200th St

## BROOME

- 1 \*Edmund B. Jenks, R., Whitney Point
- 2 Forman E. Whitcomb, R., Union

## CATTARAUGUS

- \*De Hart H. Ames, R., Franklinville

## CAYUGA

- \*L. Ford Hager, R., Red Creek

## CHAUTAUQUA

- 1 Hermes L. Ames, R., Falconer
- 2 \*Joseph A. McGinnies, R., Ripley

## CHEMUNG

- John J. Richford, R., Elmira

## CHENANGO

- \*Bert Lord, R., Afton

## CLINTON

- \*Wallace E. Pierce, R., Plattsburgh

## COLUMBIA

- William J. Alvord, R., Columbiaville

## CORTLAND

- \*George H. Wiltsie, R., Cortland

## DELAWARE

- J. Clark Nesbit, D., Bloomville

## DUTCHESS

- 1 \*James C. Allen, R., Clinton Corners
- 2 \*Frank L. Gardner, R., Poughkeepsie

## ERIE

- 1 \*Alexander Taylor, R., 235 Hampshire St., Buffalo
- 2 \*John W. Slacer, R., 1203 West Ave., Buffalo
- 3 \*Nicholas J. Miller, R., 12 Cayuga St., Buffalo
- 4 \*James M. Mead, D., 21 S. Geary St., Buffalo
- 5 \*Alex. A. Patrzykowski, D., 1119 Broadway, Buffalo
- 6 Geo. H. Rowe, R., 472 Ellicott Sq., Buffalo
- 7 \*Herbert A. Zimmerman, R., Kenmore
- 8 \*Nelson W. Cheney, R., Eden

## ESSEX

- \*Raymond T. Kenyon, R., Ausable Forks

## FRANKLIN

- \*Warren T. Thayer, R., Chateaugay

## FULTON &amp; HAMILTON

- \*Burt Z. Kasson, R., Gloversville

## GENESEE

- \*Louis H. Wells, R., Pavilion

## GREENE

- \*Harding Showers, R., Tannersville

## HERKIMER

- \*Edward O. Davies, R., Ilion

## JEFFERSON

- \*Henry E. Machold, R., Ellisburg

KINGS

- 1 \*Patrick H. Larney D 252 High St
- 2 William H. Fitzgerald R 1084 8th St
- 3 \*Frank J. Taylor D 50 Van Dyck St
- 4 \*Peter A. McArdle D 151 Hewes St
- 5 \*James H. Caulfield Jr, R, 872 Madison St
- 6 William M. Feigenbaum S, 1514 76th St
- 7 \*Daniel F. Farrell D 378 17th St
- 8 \*John J. McKeon D, 413 Smith St
- 9 \*Frederick S. Burr, D, 8223 Ridge Blvd
- 10 Malon R. Mathewson, R, 37 7th Ave
- 11 Thomas E. Brownlee, R, 136 Gates Ave
- 12 Albert Link, D 483 8th St
- 13 \*Morgan T. Donnelly, D 101 Power St
- 14 \*Joseph S. Whitehorn, S 235a Vernon Ave
- 15 \*Jeremiah F. Twomey D 151 Javv St
- 16 Kenneth F. Sutherland, D 2834 W 1st St
- 17 \*Frederick A. Wells R 1339 Bedford Ave
- 18 Marshall Snyder, R, 1346 Eastern Parkway
- 19 \*Benjamin C. Klingman, D 144 Irving Ave
- 20 George J. Braun D 149 Bleecker St
- 21 \*Wilfred E. Youker R 310 Kenmore Pl
- 22 James J. Morris D, 2244 Pitchen Ave
- 23 \*Abraham I. Shuplaff S 759 Howard Ave

LEWIS

Albert A. Copley, R Lowville

LIVINGSTON

\*George F. Wheelock R Leicester

MADISON

\*Morrell E. Tallett R DeRuyter

MONROE

- 1 \*James A. Harris R Penfield
- 2 \*Simon L. Adler R 17 Argyle St Rochester
- 3 \*Henry B. Crowley R, Alexander St, Rochester
- 4 \*Frank Dohson R Greece
- 5 \*Franklin W. Judson R, Gates

MONTGOMERY

\*Ernstus Corning Davis R Fonda

NASSAU

- 1 \*Thos. A. McWhunney, R. Lawrencece
- 2 Franklin A. Coles R. Glen Cove

NEW YORK

- 1 \*Peter J. Hamill D 262 William St.
- 2 \*Caesar B. F. Barra D 57 Kenmare St
- 3 \*Peter P. McElligott, D 360 W 21st St
- 4 William Karlin S 32 E 107th St
- 5 \*Charles D. Donohue D 408 W 43rd St
- 6 Elmer Rosenberg S 259 E 4th St
- 7 \*Abram Ellenbogen R 233 Broadway
- 8 Louis Waldman S 225 E 12th St
- 9 \*Martin Bourke R 4 W 92nd St
- 10 Eliot Tuckerman R 121 E 35th St
- 11 William C. Amos R 320 Riverside Drive
- 12 \*Martin G. McCue D 734 Third Ave
- 13 Charles M. Haviann D 550 W 126th St
- 14 \*Mark Goldberg D 222 E 72nd St
- 15 \*Schuyler M. Meyer R 20 Exchange Pl
- 16 \*Maurice Bloch D 407 E 88th St
- 17 August Claessens S 64 E 77th St
- 18 \*Owen M. Kiernan D 163 E 89th St
- 19 Edward A. Johnson R 17 W 132nd St
- 20 Charles A. Winter D 54 E 29th St
- 21 \*Harold C. Mitchell R 2394 Seventh Ave.
- 22 \*Earle A. Smith D 555 W 173rd St
- 23 Ellis A. Bates R 720 W 180th St

NIAGARA

- 1 \*William Bewley R Lockport
- 2 Nicholas V. V. Franchot 2d R., Niagara Falls

ONEIDA

- 1 Henry D. Williams R 1205 Kemble St Utica
- 2 \*Louis M. Martin R Clinton
- 3 \*George T. Davis R 106 Maple St, Rome

ONONDAGA

- 1 \*Manuel J. Soule R Euclid
- 2 \*Harley J. Crane R 204 London Ave Syracuse
- 3 \*George R. Fearon R 511 Van Buren St Syracuse

\* Re elected

ONTARIO

George M. Tyler R North Bloomfield

ORANGE

- 1 \*William F. Brush, R Newburgh
- 2 \*Charles L. Mead, R Middletown

ORLEANS

\*Frank M. Lattin, R, Albion

OSWEGO

\*Thaddeus C. Sweet, R, Phoenix

OTSEGO

\*Allen J. Bloomfield, R Richfield Springs

PUTNAM

\*John P. Donohue R, Garrison

QUEENS

- 1 \*Peter A. Leiminger D, Astoria
- 2 \*Peter McGarry D Blissville L I City
- 3 John Kennedy, D, 2 Lenox Ave, Winfield
- 4 \*Frank Hopkins R, 32 Willet St, Jamaica
- 5 James Brackley, D, Far Rockaway
- 6 \*William O'Hare D Glendale

RENSSELAER

- 1 \*Thomas F. Shannon D Troy
- 2 \*Arthur Cowee, R, Berlin

RICHMOND

- 1 Thomas F. Curley, D Castleton Park N B
- 2 \*Henry A. Susselberg D 12 Pierce St, Concord

ROCKLAND

Gordon H. Peck, R West Haverstraw

ST. LAWRENCE

- 1 \*Frank L. Seaker R Gouverneur
- 2 \*Edward A. Everett R Potsdam

SARATOGA

\*Gilbert T. Seelye R, Burnt Hills

SCHENECTADY

- 1 \*Walter S. McNab, R Niskayuna
- 2 A. Edgar Davies, R 501 Lenox Rd Schenectady

SCHOHARIE

\*George A. Parson D, Sharon Springs

SCHUYLER

Hiram H. Graham, R, Beaver Dams

SENECA

\*Lewis W. Johnson R Seneca Falls

STEBUN

- 1 \*Samuel E. Quackenbush R Corning
- 2 \*Richard M. Prangen, R, Hornell

SUFFOLK

- 1 \*DeWitt C. Talmage R East Hampton
- 2 \*Henry A. Murphy, R Huntington

SULLIVAN

\*William B. Voorhees R Roscoe

TIOGA

\*Daniel P. Witter R, Berksheire

TOMPKINS

\*Casper Fenner, R R D 9 Ludlowville

ULSTER

\*Joel Brink R, Katrine

WARREN

Frank C. Hooper R North River

WASHINGTON

\*Charles O. Pratt, R Cambridge

WAYNE

\*Frank D. Gaylord R Sodus

WESTCHESTER

- 1 Bertrand G. Burnett, R Bronxville
- 2 William J. Fallon R Mamaroneck
- 3 William Belknap D Oscawanna
- 4 Michael A. Trahan Jr R Yonkers
- 5 \*George Blakely R Yonkers

WYOMING

\*Bert P. Gage R, Warsaw

YATES

James Monroe Lown Jr, R, Penn Yan

## Medical Society of the State of New York

### ORGANIZATION

#### OFFICERS

The officers of the Society are a President, three Vice-Presidents, a Secretary, Assistant Secretary, Treasurer, Assistant Treasurer and the eight District Councilors

#### HOUSE OF DELEGATES

The House of Delegates consists of 150 Delegates elected by the County Societies, each Society being entitled to as many Delegates as it has Assemblymen in the State Legislature

The officers of the Society and the Chairmen of the standing committees (Scientific Work, Legislation, Public Health and Medical Education, Arrangements, Medical Research, Medical Economics), are *ex-officio* members entitled to vote

#### COUNCIL

The Council is a body of twenty-one members consisting of the President, the three Vice-Presidents, the Secretary, Treasurer, retiring President of the past year, the eight District Councilors and the Chairmen of the standing committees

It is required by the By-Laws to meet at once for organization, after the adjournment of the Annual Meeting. Regular meetings must be held in May and December, and may be held at such other times as necessity may require

#### THE BOARD OF CENSORS

The Board of Censors consists of the eight Councilors together with the President and Secretary of the Society. It is an appellate court and meets only as appeals may require its action

#### DISTRICT BRANCHES

The State is divided into eight District Branches, each of which elects a President, who is, in addition, a Councilor of the State Society. They take office upon the adjournment of the Annual Meeting of the Medical Society of the State of New York, succeeding their election by the District Branches. The first four Branches elect their officers on the even years, the remaining four Branches elect officers on the odd years.

The Councilors are members of the House of Delegates, the Council and the Board of Censors

#### STANDING COMMITTEES

The standing committees are six in number, the Chairmen being members of the House of Delegates and the Council

*Scientific Work.* Consists of a Chairman, elected by the House of Delegates, a member appointed by the President of the Society and approved by the Council, and the Chairmen of the different Sections

*Legislation.* Consists of a Chairman, elected by the House of Delegates, and the Chairmen of the Legislative Committees of the different County Societies

*Public Health and Medical Education.* Consists of a Chairman, elected by the House of Delegates, and eight (8) additional members nominated by the Chairman and approved by the Council

*Arrangements.* Consists of a Chairman, elected by the House of Delegates, and seven (7) additional members nominated by the Chairman and approved by the Council

*Medical Research.* Consists of a Chairman, elected by the House of Delegates and one member for each 200 or fraction thereof of the membership of the eight District Branches, nominated by the Chairman and approved by the Council

*Medical Economics.* Consists of a Chairman, elected by the House of Delegates, and four (4) additional members nominated by the Chairman and approved by the Council

#### REFERENCE COMMITTEES

Immediately after the organization of the House of Delegates at each annual session the President shall appoint from among the members present such committees as may be deemed expedient by the House of Delegates. Each committee shall consist of five members, unless otherwise provided, to be appointed by the President. These committees shall serve during the session at which they are appointed

#### SPECIAL COMMITTEES

Special Committees may be created by the House of Delegates to perform the special functions for which they are created. They shall be appointed by the officer presiding over the meeting at which the committee is authorized, unless otherwise ordered by the House of Delegates

The following Special Committees have been appointed to report to the Annual Meeting in 1918

*To Consider Redistricting District Branches.* Three (3) members, Dr Lytle, Chairman

*On Counsel.* Three (3) members, Dr Brown, Chairman

*To Revise the Present Workmen's Compensation Laws.* Five (5) members, Dr Rooney, Chairman

*On New Members.* Three (3) members, Dr Tinker, Chairman

*Prize Essays.* Consists of three (3) members, elected by the House of Delegates for a term of two years

#### COMMITTEES OF THE COUNCIL

The Council is the Finance Committee of the Society and has control of all publications and is entrusted with the power to pass upon County Society By-Laws. For the speedy execution of these duties it appoints annually three committees

*Finance.* A committee of three (3) members of which the Treasurer has always been the Chairman

*To Pass Upon County By-Laws.* A committee of three (3) members of which the Secretary has always been Chairman

*On Publication.* A committee of five (5) members having immediate supervision of the Society's publications

#### SECTIONS

There are six (6) sections: Medicine, Surgery, Obstetrics and Gynecology, Eye, Ear, Nose and Throat; Pediatrics, Public Health, Hygiene and Sanitation

The election of officers of the Sections is the first order of business of the afternoon meeting of the second day of each Annual Session. The Chairmen of the various Sections are members of the Committee on Scientific Work

#### DELEGATES TO AMERICAN MEDICAL ASSOCIATION

The Medical Society of the State of New York is entitled to eleven (11) Delegates and eleven (11) Alternates, five Delegates and five Alternates are to be elected at the Annual Meeting in 1918

#### ANNUAL MEETING

The time and place of holding each Annual Meeting is decided by the House of Delegates. The next Annual Meeting will be held at Albany on the week of May 20, 1918

## Meeting of the Council

A meeting of the Council was held at the State Society offices 17 West 43d Street, New York City, on Saturday, December 8 1917, Dr Thomas H Halsted Acting President, in the Chair Dr Floyd M Crandall Secretary.

The meeting was called to order by the Acting President at 1025 A. M. and on roll call the following members answered to their names: Dr Thomas H Halsted Albert Warren Ferris, Marcus B Heyman Floyd M Crandall Frank Van Fleet Frederic E Sondern, Thomas J Harris acting in Dr Lloyd's place, Richard Giles Arthur H Terry James J McCaw, Arthur W Booth William Mortimer Brown Albert T Lytle.

A quorum being present Dr Halsted announced the meeting open for business.

The minutes of the last meeting were approved as printed in the *NEW YORK STATE JOURNAL OF MEDICINE*.\*

The Secretary made a short report stating that the Directory is a little late this year owing to illness of the clerks in the Secretary's office during the summer, two printers' strikes and finally, the commandeering of Boyd's services who had the delivery of the book, by the government. The Secretary then distributed to the Councilors a report of the organization of the State Society.

The Treasurer reported that after the payment of the bill for the 1917 Directory there would be a balance on hand of \$7910.70.

The Treasurer also reported the investment of \$500 of the Prize Funds in Liberty Bonds.

Dr Thomas J Harris Acting Chairman of the Committee on Scientific Work, reported as follows:

It is a pleasure for me to do anything for the State Society, and especially for my friend Dr Lloyd, and so, when the Secretary of the State Society asked me to help in the work of the Committee on Scientific Work in the absence of Dr Lloyd in France I cheerfully responded.

Everything is progressing very favorably from the standpoint of the scientific work. The section officers are all still in this country and they seem to appreciate their responsibility and have their programs well in hand.

We propose to have a meeting of the Committee in this city this afternoon to unify things and see exactly where we stand. We feel that to a very considerable degree the success of the meeting from a scientific standpoint depends upon the various meeting rooms. The new Court House at Albany will offer a very fine meeting place where all the Sections will meet under the same roof. In the past we were somewhat handicapped because the Sections met in scattered parts of the city. This will be avoided.

Two years ago last year I had the honor to be Chairman of the Committee on Scientific Work. I brought before the Council the desirability of having the discussions properly preserved and printed. The Council after due consideration adopted my view, and gave me, as Chairman, authority to employ reporters at a cost not to exceed \$400. So far as I can learn the experiment of employing stenotype operators because it was an experiment which was first tried at Saratoga Springs was a success. The plan of reporting discussions was repeated at Utica and I recommend to the Council that the Chairman of the Committee on Scientific Work be given the authority to employ reporters to report the various Section Meetings at a cost not to exceed \$400.

Moved and seconded that the report of the Committee on Scientific Work be received and approved including the recommendation. Motion carried.

\* See *NEW YORK STATE JOURNAL OF MEDICINE* July 1917 page 342.

Dr William M Brown Chairman of the Committee on Counsel, presented the following report:

*To the Council of the Medical Society of the State of New York*

The Special Committee on Counsel begs leave to present the following report:

On August 6th the Committee met and after considerable discussion of the contract under which Mr Lewis is working for the Society and the intent of the resolution of the House of Delegates, Dr Van Fleet was instructed to confer with Mr Lewis and learn what steps had been taken to carry out the purpose of the action of the House of Delegates and the Council.

On December 7th another meeting of the Committee was held and Mr Lewis was requested to appear before us and inform the Committee what had been done in the matter of obtaining an assistant.

Mr Lewis stated that he did not feel bound by the resolution of the House of Delegates or the resolution of the Council to employ any assistance in his work, but nevertheless in deference to the sentiment expressed in the report of the 'Committee on Counsel' to the House of Delegates at its meeting in Utica he had tried to obtain an assistant and had at different times since that meeting employed four different lawyers to assist him in the work, but has been unable to get anyone to remain at the work longer than twenty days and that at the present time he has no additional help in his work for the State Society.

Respectfully submitted,

WILLIAM M BROWN, Chairman  
FRANK VAN FLEET

It was moved and seconded that the report of the Committee on Counsel be received. Motion carried.

Moved by Dr Brown and seconded, that the words of the report 'by the resolution of the House of Delegates or the resolution of the Council' be revised to read 'by the resolution of the Council'.

Moved by Dr Ferris that the action in accepting the previous report be reconsidered. Seconded and carried.

Moved by Dr Ferris that the report as amended be received and placed on file and the Committee continued. Seconded and carried.

Dr Lytle Chairman of the Committee to Consider Redistricting the District Branches, reported as follows:

The Committee is at work upon this question and reports progress. We had a long distance meeting and decided upon sending a questionnaire to the Presidents of the County Societies and the Presidents of the District Branches asking them to express their opinion in regard to redistricting the state and especially their part and reply as soon as possible.

At the present time the number of replies is insufficient to determine the opinion or the feeling on the part of the physicians in the state.

Moved that the report of the Committee be received. Seconded and carried.

The Secretary read the following report from the Committee on Arrangements:

*To the Council of the Medical Society of the State of New York*

GENTLEMEN

Your Committee of Arrangements make the following report:

Owing to the war several of our committee are unable to serve we are therefore deprived of very valuable assistants—Dr Thomas Jenkins Dr Andrew MacFarlane Dr James N Vander Veer Dr Edgar A Vander Veer has consented to act for Dr James Vander Veer, and Mrs Edgar Vander Veer has accepted the Chairmanship of the Women's Auxiliary.

Our Committee has met many times and we believe discussed all the details for the State Meeting. On November 20th Dr Crandall came to Albany and met our

Committee and also spoke before the Medical Society of the County of Albany. He was shown our meeting place, and I trust that in my absence he will describe it to you. Our plan of meetings follow.

On Monday, May 20th, we will have Chancellors' Hall, Education Building, State of New York, which has a large auditorium capable of seating fifteen hundred. As we have this hall for the rest of the session we can use it for the general meeting and any other meetings that may be arranged.

Our new Court House is one block north of our old State Hall and two blocks from the Education Building, which, as you all probably know, is directly opposite our State Capitol. It will be possible for us to have all sections meet in this County Court House, which is absolutely up-to-date, with an excellent ventilating system. It is practically free from noise, one street having been cut off when the building was built. All rooms are equipped with adjustable shades so that they can be darkened instantly for the use of lanterns.

Our exhibit hall we expect to have in the old City Hall building, which is now being remodeled and which will, in all probability, be completed in time for our meeting. This will be an excellent place, for there is to be a large room on the ground floor from which the seats can be removed. I trust that Dr. Crandall will explain the position of these three buildings, for we believe that the group of meeting places is, as far as the State Society is concerned, unique.

At this time it is impossible to make any arrangements with the railroads, and of course, owing to the war, we have no idea that prices will be lowered.

Respectfully submitted,

ARTHUR J. BEDELL, *Chairman*

Dr. Van Fleet presented the following resolution.

*Resolved*, That in the opinion of the Council the so-called Boylan Narcotic Law should be amended to properly protect regularly licensed members of the medical profession in the State of New York, and that a special committee be named to co-operate with the Legislative Committee to that end.

Moved by Dr. Brown that Dr. Van Fleet be representative of the State Society to appear before the Whitney hearings on the narcotic law. Seconded and carried.

Moved by Dr. Crandall that the President be empowered to appoint acting officers in place of those who are unable to fulfil their duties. Seconded and carried.

The Secretary read the following report from the Committee on Medical Economics.

*To the Council*

Your Committee on Medical Economics reports that there is no present effort being made to introduce social insurance legislation, and it is unlikely that any bill of this character will be introduced during this session of the legislature. It is the opinion of your Committee that sooner or later efforts will be made to push legislation along these lines and as no bills yet presented are satisfactory, your Committee is engaged in the preparation of some substitute plan which, if it meets with your approval, can be utilized when the occasion arises.

The Committee recommends that so long as there is no activity on the part of the sponsors for Social Insurance, that the State Society remain silent.

The Committee offers the following resolution and hopes that the Council will take action upon it at the present meeting.

*Resolved*, That the Medical Society of the State of New York urges the repeal of Section 209 of the War Tax Law of 1917, in so far as it imposes an extra tax on the incomes of professional men above \$6,000 per annum. The Society fully approves of such taxation as will fully carry out the purposes of the government in the war, but it opposes the inequality and unfairness of

Section 209 in imposing an excess tax upon incomes derived from labor and none upon incomes derived from investments.

The Society calls upon its Senators and Representatives in Congress to repeal this discriminating provision of Section 209.

The Secretary is instructed to forward a copy of these resolutions to Senators and Members of Congress representing the constituency of this Society.

Respectfully submitted,

HENRY LYLE WINTER, *Chairman*

Moved that the report be received and placed on file and the Committee continued. Seconded and carried.

Moved that the Council, having received the communication from the Committee on Medical Economics, directing its attention to the extra tax levied on the incomes of professional men, requests the members of the various County Medical Societies to take the matter into thoughtful consideration and pass such resolutions as they may think wise. Seconded and carried.

The Secretary read Dr. Bovaird's resignation from the Committee to Revise Workmen's Compensation Laws. It was moved, seconded and carried, to accept this resignation. It was moved, seconded and carried that Dr. Rooney be requested to nominate for appointment by the President a member to fill the vacancy.

The Secretary read Dr. Lyle's resignation from the Committee on Publication. It was moved, seconded and carried, to accept this resignation, and Dr. E. L. Hunt was appointed to fill the vacancy.

The Secretary read a communication from Dr. W. G. Lewis in reference to the formation of a Section on Electro-Therapeutics. It was moved, seconded and carried that the matter of a Section on Electro-Therapeutics be referred to the House of Delegates.

It was moved, seconded and carried that the resolution laid on the table at the July meeting of the Council, in regard to the remittance of the dues of members in active service, be taken from the table.

Dr. Van Fleet moved that no member of the State Society in the service of the government be dropped for non-payment of dues, and that the Finance Committee be empowered to remit such dues when the application is made in writing.

After discussion, Dr. Van Fleet withdrew his motion. Dr. Lyle moved that the Secretary and Treasurer be instructed to continue in good standing the membership of such members as are in war service. Seconded.

As such action would be contrary to the Constitution, no further action was taken.

Dr. Booth moved that the matter be referred to the House of Delegates. Seconded and carried.

There being no further business the meeting adjourned.

FLOYD M. CRANDALL, *Secretary*

## County Societies

### MEDICAL SOCIETY OF THE COUNTY OF ALBANY

SPECIAL ANNUAL MEETING, ALBANY, N. Y.

Friday, December 14, 1917

The meeting was called to order in the County Court House, at 8:30 P. M., by the Vice-President, Dr. E. E. Himman.

The report of the Secretary was read and accepted. Owing to the absence of the Treasurer his report was read by the Acting Treasurer, Dr. L. R. Worrell.

It was voted that an auditing committee be appointed to inspect the accounts. Drs. Happel and Rossman were appointed to proceed at once with their duties and report later.

Dr. C. W. L. Hacker read the report of the Public Health Committee, which was accepted.

A letter from Dr Lipes was read by the Secretary, and it was moved that the Secretary be empowered to write Dr Lipes on the adoption of his suggestions, omitting two of the recommendations. Carried. Dr Rooney moved that Dr Bedell's motion be reconsidered. Dr Bedell moved that a letter of good will be sent to Dr Lipes. Seconded and carried.

The next order of business being the election of officers Dr F C Conway was requested to take the Chair by Dr Hinman. The following nominations were made: For President Dr E E Hinman by Dr Traver, and Dr Howard Lomax by Dr Mount. Drs Drake and Reynolds were appointed tellers and reported as follows: Total number of votes 61, Dr Hinman, 27, Dr Lomax 33, blank 1. Dr Hinman moved that the election of Dr Lomax be declared unanimous. Carried.

For Vice-President Dr C H Moore by Dr Bedell and Dr Howard Branan by Dr Bedell. Drs Lihen and O Donnell were appointed tellers and reported as follows: Total number of votes cast 61. Dr Moore 35, Dr Branan, 26. Dr Moore declared elected by the Chair.

For Secretary Dr C W L Hacker nominated Dr E S Haswell. Dr Root seconded nomination and moved one ballot be cast for Dr Haswell.

Dr Rooney objected and nominated Dr Ellis Kellett. Drs Cox and George were appointed tellers, and reported as follows: Total number of votes cast 61. Dr Haswell 35, Dr Kellett 26. Dr Haswell declared elected by the Chair.

Dr Mereness moved that one ballot be cast for Dr Worrell as Treasurer. Seconded and carried. Dr Worrell was unanimously elected.

For Censors Drs J B Craig, E A Vander Veer, A N Traver, E E Hinman, T Luyser, E Stapleton, G W Papen, Sr, L B Mount, W George, M D Stevenson, J B Congdon. Dr Craig requested that his name be withdrawn but the nominator insisted upon his running. Drs Kemp and Pitts were appointed tellers and the following Censors were declared elected: Drs Stapleton, Papen, Vander Veer, Congdon and Mount.

Nominations for Delegates to the House of Delegates of the County Society was then brought up and the Chair stated that he believed they were not in order, that the Delegates were elected for two years and that they were elected at the last annual meeting.

The Secretary stated that while the minutes of the last annual meeting were in another volume filed in his office it was his recollection that the Delegates were last elected in May, 1915.

Dr Traver moved that the election of Delegates be postponed until the January meeting.

As the vote was a tie the Chair cast the deciding vote and the motion was carried.

Dr Haswell moved to reconsider the question but as he had voted in the negative he was declared out of order.

Dr Worth who had voted in the affirmative moved to reconsider the question. Carried. On reconsideration the question was carried but the Chair maintained its original position that the election of Delegates was out of order and it was so ruled.

Dr Hinman Chairman *pro tem* presented the question of the Red Cross membership for physicians and urged all to make application and become members after the meeting.

On motion of Dr Dowling it was voted that the Society purchase a service flag which shall be displayed at each meeting and that a list composed of those in active service be prepared and read at each meeting.

On motion of Dr Rooney seconded by Dr Dowling it was voted that the dues of members in active military service be remitted and that the amount of their per capita of the state assessment be paid to the state by the Treasurer.

The Auditing Committee reported that the Treas-

urer's report was correct. Report of Auditing Committee accepted.

On motion of Dr J L Bendell it was voted that a list of members in active military service be mailed to Mr Edgar Griffiths.

The Chair transferred the gavel to Dr Lomax, there by installing him in office.

## MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN

ANNUAL MEETING MALONE N Y

Tuesday, December 11, 1917

The meeting was called to order in the Flanagan Hotel by the President Dr A L Rust.

Members present Drs A L Rust, Abbott, Grant, Macartney, Finney, Harrigan, Sprague, Prairie, McCarthy, Van Dyle, White, Daphin, Harwood and Blanchet. Visitors: Drs D A Hingston, Montreal, Edward H Marsh, Brooklyn and Mr H L Sampson of Trudeau Sanatorium.

The meeting of the Comitia Minora which met at 11:45 A M was followed by the business session which was called to order at 12 o'clock.

The minutes of the last meeting and the report of the Comitia Minora were read and approved.

The reports of the Secretary and Treasurer were read and were accepted, by vote as read. The Secretary's report showed 49 members in good standing and the Treasurer's report showed a balance of \$192.70 on hand.

Several communications regarding the Federal and State Narcotic Drug Laws were read after some discussion the following resolution offered by Dr P F Daphin was seconded and unanimously passed.

Resolved That the present Federal Narcotic Law known as the Harrison Law has been found efficient and meeting the practical needs of the habit forming drug situation and the present state law has been found burdensome in its added details, and in our opinion unnecessary we therefore respectfully suggest the repeal of the present State Law in its entirety.

(Signed) A L Rust President  
G M Abbott Secretary

The following officers were elected for the ensuing year: President William N Macartney, Fort Covington; Vice President John A Grant, Malone; Secretary Treasurer, George M Abbott, Saranac Lake; Censor for Three Years Charles C Trembley, Delegate State Society John W Blackett.

The President appointed the following committee to solicit new members: Drs P F Daphin, J A Farrell, W A Wardner.

The matter of changing the date of the Annual Meeting was taken up and after considerable discussion the Secretary offered the following resolutions.

WHEREAS The date of our Annual Meeting as provided by Sec II of Chap IX of our By Laws falls upon the second Tuesday of December in each year, when the weather is liable to be very cold and inclement and the roads are apt to be blocked with snow so that it is almost impossible for many of our members to attend.

Be It Resolved That the aforesaid Sec II of Chap IX of our By Laws be amended by changing the word "December" on the second line of the section to the word "November," so that the section shall read "The Annual Meeting shall be held on the second Tuesday of November of each year, etc."

Meeting adjourned at 1 o'clock for lunch.

SCIENTIFIC SESSION 2 P M

'Fifteen Months in France with the McGill Hospital Unit. Donald A Hingston MD Montreal.

'Artificial Pneumothorax—Experience with Fifty Cases. Sidney F Blanchet MD Saranac Lake.

The Treatment of Venereal Diseases as a Public

Health Problem," Edward H Marsh, M D, Sanitary Supervisor, Brooklyn  
 "Defects Found in Drafted Men," F W McCarthy, M D, North Bangor

### RICHMOND COUNTY MEDICAL SOCIETY

ANNUAL MEETING, NEW BRIGHTON, N Y

Wednesday, December 12, 1917

The meeting was called to order at 9 P M by the President, Dr Max Krueger. The minutes of the regular meeting, November 14th, and a special meeting, held on November 27th, were read and approved.

The Society then proceeded to the election of officers for 1918, and on motion, regularly made and carried, it was unanimously voted that the Secretary cast one ballot for the following candidates nominated at the previous meeting: President, John D Lucey, Vice-President, Daniel Philip MacGuire, Secretary, John Sayers Ware, Treasurer, Edward D Wisely, Censors, E Warren Presley, Charles R Kingsley, Jr, Frederick Conoley, Delegate to State Society, E Warren Presley, Alternate, C R Kingsley, Jr, and they were declared duly elected.

The Secretary read a letter from the St John's Guild asking for names of members interested in appointments to the medical staff of the St John's Guild Sea Side Hospital, at New Dorp.

Reports for the year 1917 were read by the Treasurer and Secretary, respectively, and it was regularly moved and carried that they be spread upon the minutes.

Dr Pearson, Chairman of the Committee on Legislation, reported favorably on the resolution adopted by the Auburn Academy of Medicine, of Auburn, N Y, advocating the repeal of a new state law controlling the sale and use of narcotic and habit-forming drugs.

After discussion it was voted to indorse the resolution as adopted by the Auburn Academy of Medicine and to notify our State Representatives and State Committee on Legislation accordingly.

Dr Louis F Bishop read the paper of the evening, taking as his subject, "The Cure of Heart Disease in America as Replacing the Heart Cures of Europe."

A vote of thanks was tendered Dr Bishop for his interesting paper, and the meeting adjourned to the Staten Island Club, where a collation was served.

### MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON

ANNUAL MEETING, DANVILLE, N Y

October 2, 1917

The meeting was called to order at 11 A M, the Society being the guests of the Jackson Health Resort.

A resolution was passed remitting the dues of those members who have entered the service of the United States Army.

The following officers were elected for the coming year: President, Francis V Foster, Caledonia, Vice-President, Arthur L Shaw, Sonyea, Secretary Treasurer, G Kirby Collier, Sonyea, Delegate, Frederick J Bowen, Censors, Walter E Lauderdale, Frederick J Bowen, John P Brown, Fred R Driesbach, Frederick A Wicker.

#### SCIENTIFIC PROGRAM

"Some Practical Points in Pediatrics," DeWitt H Sherman M D, Buffalo

"Differential Diagnosis of Some Forms of Headache," Arthur G Bennett, M D, Buffalo

"Version," Irving W Potter, M D, Buffalo

"Report of a Case with a Brief Discussion of the Indications for Cesarean Section," Charles H Ghidde, M D Danville

Reports of cases followed the reading of the papers

## Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

**SHELL SHOCK AND ITS LESSONS** By G ELLIOT SMITH, M A, M D, F R C P, F R S, and T H PEAR, B Sc Manchester, University Press, Lond, N Y and Bombay Longmans, Green & Co, 1917 Cloth, \$1 00

**MALINGERING AND FEIGNED SICKNESS** With Notes on the Workmen's Compensation Act, 1906, and Compensation for Injury, Including the Leading Cases Thereon By Sir JOHN COLLIE, M D, J P Illustrated Second edition, revised and enlarged London Edward Arnold, 1917 Cloth, \$5 00

**THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES** By E R STITT, A B, Ph G, M D Second edition, revised and enlarged Phila P Blakiston's Son & Co, 1917 Illustrated Cloth, \$2 00

**MEDICAL DIAGNOSIS** For the Student and Practitioner By CHARLES LYMAN GREENE, M D Illustrated Phila P Blakiston's Son & Co, 1917 Cloth, \$10 00

**NOTES FOR ARMY MEDICAL OFFICERS** By Lt-Col T H GOODWIN, R A M C With an Introductory Note by Surgeon-General WILLIAM C GORGAS, U S A Illustrated Phila Lea & Febiger, 1917 Cloth, \$1 00 (Medical War Manual No 2, Authorized by the Secretary of War and under the Supervision of the Surgeon-General and the Council of National Defense)

**A CLINICAL TREATISE ON DISEASES OF THE HEART** By EDWARD E CORNWALL, Ph B, M D N Y Rebman Co, 1917 Cloth, \$1 50

**THE TREATMENT OF INFANTILE PARALYSIS** By ROBERT W LOVETT, M D, Boston, JOHN B and BUCKMINSTER BROWN, Professors Orthopedic Surgery, Harvard Medical School Second edition, revised and enlarged, with 123 illustrations P Blakiston's Son & Co, 1012 Walnut St, Phila, Pa Price, \$1 75

**A CLINICAL TREATISE ON DISEASES OF THE HEART FOR THE GENERAL PRACTITIONER** By EDWARD E CORNWALL, Ph B, M D, Attd Phys Williamsburgh and Norwegian Hosps, Cons Phys Bethany Deaconess Hosp, F A C P, American Medical Association Rebman Co, New York, 1917 Price, \$1 50

**A HANDBOOK ON ANTISEPTICS** By HENRY DRYSDALE DAKIN, D Sc, F I C M, F R S, and EDWARD KILLOGG DUNHAM, M D, Emeritus Professor of Pathology, University and Bellevue Hosp Medical College, Major, Medical Officers Reserve Corps, U S A The Macmillan Co, New York, 1917 Price, \$1 25

**THE SURGICAL CLINICS OF CHICAGO, Vol I No 6** (December, 1917) Index Number, octavo, 245 pages, 89 illustrations Philadelphia and London W B Saunders Company, published bi-monthly Price per year Paper, \$10 00, Cloth, \$14 00

**THE MEDICAL CLINICS OF NORTH AMERICA, Vol I, No 3** (The New York Number, November, 1917) Octavo of 346 pages, 37 illustrations Philadelphia and London W B Saunders Company, published bi-monthly Price per year Paper, \$10 00, Cloth, \$14 00

**A BRIEF INTRODUCTION TO THE GENERAL PRINCIPLES OF THERAPEUTICS** By FRANCIS H MCCRUDDEN, S B, M D, Director Laboratories, Robert B Brigham Hosp, Boston, Asst Prof Applied Therapeutics, Tufts Medical School, Boston Gregory, 126 Massachusetts Ave, Boston, 1917 Price, \$1 50

## Book Reviews

**MEDICAL DIAGNOSIS FOR THE STUDENT AND PRACTITIONER**  
By CHARLES LYMAN GREENE, M.D. Illustrated Philadelphia: P. Blakiston's Son & Co. 1917. 1302 pp. 8vo. Cloth \$10.00

This treatise of twelve hundred pages of text and another hundred pages of index is really a system of medicine condensed into one volume. There are fourteen colored plates and five hundred and forty-eight other illustrations of the highest order to clarify the reading matter and the outstanding feature of the work is the system of marginal notes which greatly facilitates the expeditious finding of desired information. This is nominally the fourth edition but it is really a new work as it has been almost entirely rewritten and the author utilizes the experience of twenty-five years teaching to point out not only the proper methods of examination and diagnosis but also to warn against improper methods and pitfalls in the path of careless or unscientific workers.

It is a storehouse of medical information and can be read by either student or practitioner with equal benefit. The fairly numerous typographical errors must be excused in view of the merit of the work and their presence is undoubtedly accounted for by the fact that the author was in active military service for some time prior to the appearance of this edition.

W. H. DONNELLY

**THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES**  
By L. R. STITT, A.B., Ph.D., M.D. Second Edition. Revised and Enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1917. 534 pp. 12mo. Cloth \$2.00

It is marvellous what a store of valuable information has been crowded into this little pocket sized volume. It has a durable linen binding which will stand continuous pocket and bedside use and in spite of its small size it contains five hundred and thirty-four pages. It has many excellent illustrations photographic, microphotographic, skiagraphic and diagrammatic which are invaluable to the proper understanding of the text.

The general scheme of the work is pleasing, the paper taking the impression clearly and the clever arrangement of the reading matter with a commendable system of paragraphing and judicious employment of large and small print make its reading a delight.

There are two main divisions in the work, the first and major part being devoted to 'Tropical Diseases and their Treatment' and the second to 'Diagnostics of Tropical Diseases'.

This latter part takes up the general question of problems and procedures of diagnosis in the tropics and deals with the examination of the blood, urine, feces as well as of the various systems of the body. It must not be implied that the diagnosis of the various diseases is not taken up in a most thorough manner in the first part of the work. Dr. Stitt's work in the field of tropical diseases has stamped him as an authority of international repute and makes this the second edition a welcome addition to the literature on the subject.

W. H. DONNELLY

**A TREATISE ON ORTHOPEDIC SURGERY** By ROYAL WHITMAN, M.D., M.R.C.S., Eng., F.A.C.S. Assistant Professor Orthopedic Surgery College Physicians and Surgeons, New York. Professor Orthopedic Surgery New York Polyclinic, etc. Fifth Edition. Revised and Enlarged. 704 Engravings. Philadelphia and New York: Lea and Febiger, 1917. \$6.50

This volume on Orthopedic Surgery gives us the best that we have for a book of its size at the present day. The author has thoroughly revised the last edition

which came out in 1910, adding at the same time much that is of value to the student as well as the specialist.

An important contribution to this new volume is the revision of a chapter on acute anterior poliomyelitis. The epidemic of 1916 furnished much that has been added by the author in this volume. Certain disease types such as the abortive spinal, progressive bulbar, cerebral and meningeal forms were all met with in this recent epidemic.

In the treatment of infantile paralysis the author has mentioned and in many cases emphasized the new features brought out in this New York epidemic—namely the importance of lumbar puncture for the relief of tension, the injection of blood serum from patients who have had the disease, the employment of mechanical means during the paralytic stage for the prevention of deformities and the use of muscle training as emphasized by Lovett.

Regarding the operative treatment employed the author clearly defines the accepted measures employed for the correction of deformities which develop in spite of precautions taken though far less than from former epidemics. The use of silk ligaments one of the more recent developments in operative technique is often of doubtful benefit.

We are pleased to note the importance given to clethricity in the treatment of infantile paralysis. The author's silence on this hitherto too much heralded therapeutic measure coincides with the experience of most orthopedic surgeons.

The European War has developed many branches of surgery not the least of which is military orthopedic surgery. This important subject comes in for a full chapter in this new volume. Here we find the following classification: A—Derangements and disabilities of joints, B—Pathological conditions of the feet, C—Mal united and ununited fractures, D—Injuries to tendons, muscles and ligaments, E—Tendon transplantation for nerve destruction, F—Nerve injuries complicated by fractures or stiffness of joints, G—Cases of armless or legless individuals, and these are many. This deals with the problem of artificial limb supply and the restoration of the individual to usefulness in the community.

This volume is very comprehensive and at the same time concise and to the point. It fills an important place in our knowledge of this subject. B. C. WOLFERT

**SANITATION FOR MEDICAL OFFICERS** By EDWARD B. VEDDER, M.D., Lieut.-Colonel Medical Corps U.S.A. Illustrated. Philadelphia and New York: Lea and Febiger, 1917. \$1.50. (Medical War Manual No. 1. Authorized by the Secretary of War and Under the Supervision of the Surgeon General and the Council of National Defense.)

This volume is a comprehensive work for such a small volume. It is designed essentially for medical officers, and is of a size suitable for carrying in the pocket of the uniform. In addition to the reading matter there are blank pages for notes which may be added by the reader.

Unless one reads carefully one receives the impression that previous to vaccination against smallpox the site of the vaccination should be painted with iodine. Vedder advocates latrines eight feet deep, which is contrary to the best knowledge feces buried at that depth will remain unchanged and in addition there is danger of contaminating the ground water at that depth. The chapter on recreation and the necessity therefore is especially good. It would seem that too much attention is paid to the trapping of flies giving several methods and not enough to the prevention of fly breeding. Also in this chapter on insects no description of delousing processes are given.

For newly made medical officers the book will doubtless be of great value. E. H. M.

**SHELL SHOCK AND ITS LESSONS** By G. ELLIOT SMITH, M.A., M.D., F.R.C.P., F.R.S., and T. H. PEAR, B.Sc. Manchester, University Press, Lond., N. Y. and Bombay, Longmans, Green & Co., 1917. Cloth, \$1.00.

Shell Shock is the popular but inadequate term for those mental effects of war which are sufficient to incapacitate a man from the performance of military duty. Possibly a better term is war strain. The condition presents no new symptoms, and in civil life we know it as nervous breakdown.

Its sole ground for difference from other disordered mental states lies in its unusual, intense and widespread causes. The disturbances for the most part lie in the emotional sphere and are characterized by instability and exaggeration of emotion rather than by ineffective or impaired reason. The authors treat the various phases of the subject at considerable length.

This book presents a message to the English public and emphasizes the necessity for institutional treatment of early functional nervous disorders in special wards of general hospitals. In England methods dealing with these forms of illnesses are available only for advanced cases. France, the United States and Germany have long since recognized the importance of early treatment. They have been slow of recognition in England, for if intercepted during their incipency, many of these conditions may be cured with ease.

The chapters upon Nature and Treatment of "Shell Shock," Psychological Analysis and Re-education, General Considerations and Lessons of the War are found to be well worth study.

**1916 COLLECTED PAPERS OF THE MAYO CLINIC, Rochester, Minn.** Vol. 8. Octavo of 1014 pages, 411 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$6.50 net, Half Morocco, \$8.50 net.

This is the largest volume which has emanated from this clinic. It contains over a thousand pages of precious material. Not a few papers read or published elsewhere by the staff during 1916 have been entirely omitted in this volume. Several papers have been abstracted to keep the volume within handy limits, others representing continued studies have been held over for future publication.

In order to meet the wishes of the journal in which this appears and to acknowledge the courtesy and to fulfill the request of the publishers for immediate comment, no more extensive remarks on this volume is possible under the time limit set, than to again pay tribute to this splendid organization.

One notes in passing a multitude of contributions flooding the literature with advanced information, collective reviews and statistics. To comment upon them even briefly is an herculean task. It is a veritable encyclopedia of information, and as such is indispensable in our libraries as a reference work. R. H. F.

**A CLINICAL TREATISE ON DISEASES OF THE HEART** For the General Practitioner. By EDWARD E. CORNWALL, Ph.D., M.D., N. Y. Rebman Co., 1917. 127 pp., 8vo. Cloth, \$1.50.

The many readers who are familiar with Dr. Cornwall's lucid terse style and original ideas, through his frequent contributions to current medical literature, will welcome the appearance of his book on the heart. This work, as he states in his preface, is neither an exhaustive treatise nor a digest. It contains much more information, however, than one would suppose could be crowded into a hundred and twenty-five pages, for the author has the rare faculty of presenting a subject with great clearness in a very few words.

The first part of the book is devoted to diagnosis and is divided into a section on General Diagnostics, and a section on Special Diagnostics. General Diagnostics deals with history taking, symptomatology, and the occurrence and significance of various physical signs. The physical examination of the circulatory

apparatus is described in considerable detail. There is included a description of Dr. Cornwall's method of outlining the heart by what he has called "feel percussion"—an independent observation on the principle of Pottenger's "light touch palpitation" in outlining organs. The reviewer has repeatedly resolved to train his fingers to appreciate these delicate shades in tissue density, but on each attempt finds himself waiting for the heart to feel his fingers, with its gentle push. Where the latter method fails, it would be a comfort to possess, beside percussion, as reliable a procedure as Pottenger's dissections and orthodiagnostic work have shown this to be.

The section includes some valuable observations on the significance of pulse pressure in its relation to the total pressure scale, and emphasizes the importance of the diastolic reading—a subject that has assumed much more weight since the auscultatory method has made a reliable determination possible.

The section on Special Diagnosis gives a graphic description of the usual findings in various forms of heart disease.

Part two is devoted to therapeutics of diseases of the heart. Before taking up the treatment of specific heart conditions, the author discusses the various agents that are utilized in cardiac therapy. The subject of diet, as Dr. Cornwall's friends could predict, received special attention. His recommendations take the form of practical dietetic prescriptions, which are elastic enough in their ingenious modifications to cover all indications. It seems as if the value of a dry diet in dropsical conditions might receive more attention than the author has accorded it.

In discussing drug therapy the usefulness of strophanthus is urged. The author states that smaller doses than are usually advocated are preferable. The great value of strophanthus, used intravenously or intramuscularly in desperate cases is stressed. The limitations of digitalis are described at some length. The many contraindications ascribed to digitalis by Dr. Cornwall are consistently disregarded by most therapeutists—and with benefit. Its specific effect in auricular fibrillation, which is so often encountered in broken compensation is apparently overlooked by the author. Morphine is given a well deserved place in cardiac therapy.

The section on Special Therapeutics is devoted to the treatment of particular heart ailments. It is professedly based on the author's own experience rather than upon the opinion of other authors, and presents in concise practical form the treatment found most valuable by a successful therapist.

The arrangement of the book with its many captions and complete index makes it a very usable work of reference, and the publishers have made its body worthy of its spirit in tone and efficiency. TASKER HOWARD.

**GENITO-URINARY SURGERY AND VENEREAL DISEASES** By EDWARD MARTIN, A.M., M.D., F.A.C.S., JOHN RHEA BARTON, Professor Surgery, Univ. Pennsylvania, BENJAMIN A. THOMAS, A.M., M.D., F.A.C.S., Professor Genito-Urinary Surgery Polytechnic Hosp., STIRLING W. MOORHEAD, M.D., F.A.C.S., Asst. Surgeon Howard Hospital, Phila., Pa. Illustrated with 422 engravings and 21 colored plates. Tenth Edition. Price, \$7.00. J. B. Lippincott Co., Phila. and London, 1917.

Although this work claims to be the tenth edition of White and Martin's well-known text-book on genito-urinary surgery, it is really a new edition, for in comparing it with the earlier editions one will find but little that was in the original. This is practically a new work, written by Dr. Martin in collaboration with Drs. Thomas and Moorhead.

The part dealing with genito-urinary surgery shows an intimate knowledge of current genito-urinary literature. All of the advances in this specialty have been

carefully examined and only those that proved worthy of credence have been incorporated in the text. The chapters on renal functions, prostatic surgery and sexual weakness and sterility are worth the price of the book.

It is to be regretted that the part given to the discussion of syphilis could not have been published separately for it is a pity that such a valuable contribution to the subject should be buried in a book essentially devoted to a work on a special branch of surgery. The discussion of syphilis of the nervous system or the respiratory tract seems out of place on such a work even though the sub title is venereal diseases.

For a short time in the course of the disease syphilis may be classed as venereal but when it has attacked the nervous system it is obviously out of the domain of the genito urinary specialist. The views of the authors on syphilis are so clear and their deductions so frank and honest, that it is too bad that these chapters could not have been made more accessible to the general practitioner, neurologist and syphilographer and not buried and perhaps lost in a book with the predominating title upon another entirely different class of diseases.

Without prejudice the reviewer is of the opinion that this work is one of the best that has been brought out in a long time.

The illustrations many of them appearing in the former editions are excellent depicting in a graphic manner the diseases and conditions that serve to illustrate.

The press work is of the same workmanlike character that is common to all of Lippincott's publications.  
J McF W

**REST SUGGESTION AND OTHER THERAPEUTIC MEASURES IN NERVOUS AND MENTAL DISEASES.** By FRANCIS S. DERCUM, A.M. M.D. Ph.D. Professor Nervous Diseases Jefferson Medical College, Philadelphia Consulting Neurologist General Hospital Philadelphia Second Edition Philadelphia P. Blakiston's Son & Co 1012 Walnut Street 1917 Price \$3.50 net

This book of less than four hundred pages is unusual in its scope of the subject matter dealt with and the author's name gives it a value of unquestionable pre-eminence.

The first section which discusses "Rest" covers function and its results chronic fatigue and the fatigue neurosis rest in neurasthenia and allied states hysteria hypochondria and the application of rest in chorea and other functional nervous diseases and in organic nervous diseases, thus emphasizing the primary value of rest in all of these conditions.

Part II discusses the therapeutics of mental disease under topic headings 'The Prevention of Insanity and the General Principles of the Treatment of the Insane and The Treatment of the Special Forms of Mental Disease'.

Part III Under 'Suggestion are taken up the psychiatric aspects of the various conditions mentioned.

The book is so practically compiled and systematically arranged that it serves as an excellent text book for students and a valuable reference work for the practitioner.  
H G DUNHAM

**ACUTE POLIOMYELITIS.** By GEORGE DRAPER, M.D. Associate in Medicine, College of Physicians and Surgeons, Columbia University, Associate Attending Physician Presbyterian Hospital, New York City with a foreword by Simon Flexner, M.D. With 19 illustrations. P. Blakiston's Son & Co 1012 Walnut St. Philadelphia Pa 1917 Price \$1.50 net.

The value of this monograph by Dr. George Draper, is tersely described in the foreword by Dr. Simon Flexner with whom the author has carried out much of the investigation here outlined.

This work is of value on account of the comprehensive and thorough manner in which it has been done together with the fact that unusual facilities have been at the author's disposal in every phase described. It is one of the most pregnant subjects of our time and one which, without exception, every member of the profession should become familiar with in so far as our knowledge of its mysteries permits to date.

H G DUNHAM

**DIAGNOSIS AND TREATMENT OF SURGICAL DISEASES OF THE SPINAL CORD AND ITS MEMBRANES.** By CHARLES A. ELSBERG, M.D. F.A.C.S. Professor of Clinical Surgery at the New York University and Bellevue Medical College, Attending Surgeon to Mount Sinai Hospital and to the New York Neurological Institute. Octavo 330 pages 158 illustrations 3 of them in colors Philadelphia and London W. B. Saunders Co 1916 Cloth, \$5.00.

This original and valuable contribution comes from the pen of a well known surgeon who has spent intensive effort upon the field of the surgery of the central nervous system. A study of its pages will make it clear to the surgeon that he should learn as much neurology as he can comfortably contain and will convince the neurologist that a living pathology contains recesses yet to be explored.

The book is divided into three parts.

Part I The anatomy and physiology of the spinal cord, the symptomatology of spinal cord disease. This section discusses the anatomy of the vertebral column and spinal cord the normal and pathological physiology of the spinal cord spinal localization and symptomatology a chapter on examination, one on the X ray in spinal disease and a discussion of differential diagnosis of surgical spinal lesions.

Part II Is a description of operations on the spine, spinal cord and nerve roots and is in the main rudimentary. It describes lumbar puncture exposure of spinal cord by laminectomy rhizotomy, the divisions of the antero lateral tracts for pain etc.

Part III The surgical diseases of the spinal cord and membranes and their treatment discusses the deformities inflammations injuries and new growths that come within the scope of a volume of this size. The chapter on injuries is short and will no doubt be expanded in later editions. The discussion of tumors is much more complete. The author says 'It may occasion some surprise that hematomyelia and spinal gliosis are included in a work on the surgical diseases of the spinal cord. In these diseases much harm is done to the fiber tracts by compression and the relief of this compression by surgical means has already resulted in marked improvement in a number of patients. The time is at hand when selected cases will be regularly subjected to operative interference.'

The illustrations, by Lenhard add greatly to the value of the book.  
J E JENNINGS

**A MANUAL OF THERAPEUTIC EXERCISE AND MASSAGE** Designed for the Use of Physicians Students and Masseurs. By C. HERMANN BUCHOLTZ, M.D. Illustrated Philadelphia and New York Lea & Febiger 1917 427 pp, 8vo Cloth \$3.25

This brief but comprehensive manual is intended by the author for the use of the general practitioner the student or the masseur. He states in the Preface that it is designed to fill the need for a work on the therapeutic use of exercise and massage, the neglect of which by the practitioner has caused many a patient who appreciated their value to find his way into the hands of the quacks or the incompetent. The author's position is well stated in the following quotation 'To fill the patient with endless streams of medicine, neglecting thereby the natural resources such as lie in the patient's

nerves and muscles, is just as much quackery as to pretend to heal everything with any one physical method."

The subject matter is presented in a thoroughly sensible and scientific manner. The principles underlying the various procedures mentioned are carefully presented, and no extravagant claims are made. The author lays especial stress on the fact that active exercise is far more important than passive, in the treatment of many pathological conditions for which passive exercises are apt to be prescribed. Of special interest to the general practitioner are the chapters on affections of the foot and of the sacro-iliac articulation, and that on the correction of faulty posture.

**NUTRITION AND CLINICAL DIETETICS** By HERBERT S. CARTER, PAUL E. HOWE and HOWARD H. MASON. Philadelphia and New York, Lea and Febiger, 1917 \$5.50

This book is comprehensive in its scope, including discussion of the physiology and physiological chemistry of nutrition as well as of the feeding in various conditions. In the first and second parts of the book, entitled "Foods and Nutrition" and "Foods," respectively, an account is given of the facts which form the basis of the science of dietetics as at present developed. In the last two parts, entitled "Feeding in Infancy" and "Feeding in Disease," respectively, which deal with special dietetics, the selection has been necessarily, to a considerable extent of opinions in place of established and universally acknowledged facts. Practical dietetics has not yet become standardized. The science is not advanced far enough to make it possible for a diet to be formulated for every condition or for very many conditions which will be accepted universally as beyond question the ideal one, and details and even the general plans of some of the diets set forth in this book will fail to meet the approval of some who may hold different particular opinions. This inevitable weakness of a text-book of dietetics is perhaps less apparent in the domain of infant feeding, which was the first department to receive serious scientific study, and in which standardization has been more nearly reached than in other domains.

Allowing for the differences in opinion alluded to, and also for some minor defects in the literary make-up of the book, the reviewer finds it a pleasure to commend this book, and is inclined to consider it the most generally useful one on the subject that he has seen.

E. E. CORNWALL

**TRAUMATIC SURGERY** By JOHN J. MOORHEAD, M.D., F.A.C.S., Adjunct Professor Surgery, New York Post-Graduate School and Hospital. Octavo volume, 760 pages, 522 original illustrations. Philadelphia and London W. B. Saunders Company, 1917. Cloth, \$6.50 net, half morocco, \$8.00 net.

This inspiring title suggests a large volume of many hundred pages, so it is! In reading it one is impressed, in places, by its elementary character. One experiences a sense of disappointment upon close scrutiny, and a feeling forces itself upon the reader that it was laboriously compiled, and shall we say, unnecessarily published? No, for there are some features deserving commendation. There is little, however, in the book which has not already been well treated in others. The author has attempted to place in one volume all the necessary information for the diagnosis and treatment of the common and most of the uncommon results of injury. We see no special need for this book as written.

For instance, his treatment of wounds, covering about 70 pages, is a mediocre attempt to cover a field already well represented in a score of others upon minor and general surgery. The noteworthy part of this presentation is that quoted from Kanavel's "Infections of the Hand."

Space is accorded injuries of joints, and a series of skiagrams of injected anatomical specimens from Murphy's clinics well illustrate the blood supply of joints and their vicinity. Illustrations of the various steps in the arthroplasties of the major joints as performed by the late John B. Murphy are inserted without comment. One gets the impression here that they are merely inserted for padding. If this subject was seriously considered in the text these pictures would be of great value.

Three chapters, comprising about one-third of the volume, are devoted to fractures and dislocations. This is the least valuable part of the book. Comparisons are odious, but really it would seem that those desiring light on this subject would prefer to consult a standard text-book.

The operative treatment of fractures is dismissed in three and one-half pages. We can hardly subscribe to the belief that there are some surgeons who advocate open operative methods in all cases of fracture. The author dismisses the subject of the autogenous bone graft with the statement that this will probably supercede metal plates in many cases.

The discussion of osteomyelitis and periostitis is limited to about four pages. There is a decided call for an extensive monographic study of this most interesting and neglected field. Here was an opportunity for the author to grasp.

Again, in his consideration of deformities of the hands and feet, one encounters a subject which requires criticism, for the author improperly includes certain congenital malformations.

The surgery of foreign bodies is a prolific field for exposition. The author devotes something over ten pages to this very important subject.

One properly encounters about ninety pages of excellent reading pertaining to fractures of the skull, spine and their complications.

Accidents due to electricity, compressed air and gas are well discussed. In the pathology of the latter the author fails to mention an important post-mortem lesion found in illuminating gas poison, which is of medico-legal importance, namely, degeneration of the lenticular muscles.

The medico-legal relations of trauma to abortion, miscarriage, visceral displacement, hernia and appendicitis are discussed. The latter relation might well be omitted, for it is irrelevant. The traumatic neuroses received due consideration.

Medico-legal phases, criminal and compensation cases, are discussed.

## Deaths

MORRIS NORTON BEMUS, M.D., Jamestown, died December 9, 1917

RAMON GUITERAS, M.D., New York City, died December 13, 1917

CLARENCE A. HASTINGS, M.D., Malone, died December 23, 1917

THOMAS B. HEGEMAN, M.D., Brooklyn, died December 20, 1917

MOSES J. JACKSON, M.D., New York City, died January 1, 1918

OSCAR M. LEISER, M.D., New York City, died December 8, 1917

CHARLES H. NORTH, M.D., Dannemora, died December 12, 1918

CHARLES S. PAYNE, M.D., Liberty, died December 12, 1917

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M.D. Editor

Business and Editorial Offices 17 West 43d Street New York U.S.A.  
Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N.Y. U.S.A.

## COMMITTEE ON PUBLICATION

S. W. S. Toms M.D. Chairman, New York    Edw. J. L. Hunt M.D. New York    John C. Mac Evitt M.D. Brooklyn  
Martin B. Tinker M.D. Ithaca    Frank Van Fleet M.D. New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

FEBRUARY 1918

No 2

## EDITORIAL DEPARTMENT

### ENLIGHTENING THE PUBLIC ON MEDICAL SUBJECTS

'The Purposes of the Society shall be, to enlighten and direct public opinion in regard to the great problems of State medicine"—*Preamble, Constitution of the Medical Society of the State of New York*

THIS is an object that has for years been sought by the better element of the medical profession. Difficulties in its accomplishment have been great, for enlightenment of the public has too often been accomplished by the exploitation of individual physicians. When a physician, even if prominent and conscientious, expresses an opinion publicly upon a medical subject, he is sometimes placed under the suspicion of advertising. Moreover, the opinion is that of an individual and the individual with the most conscientious motives may be swayed by personal experience. This difficulty of giving adequate medical information to the public without personal exploitation has seemed almost unsurmountable. The importance of public information on medical matters, however, has steadily grown with the advance of knowledge of preventive medicine.

The public must know, and will know of these matters. Unless some means be devised for furnishing information from reliable sources it will be issued from unreliable sources, to the endangering of the public health and the discredit of the medical profession.

Several attempts have been made to meet this problem. The most successful, as far as we know, is that of the New York Academy of Medicine. The system as it has been devised has largely obviated the difficulty of former years. It has been adapted to a great city, and in some of its features can be best carried out in such a city. The principles, however, may be applied even to small communities, and adapted to local conditions. Much may be done to meet the urgent demand for information upon medical subjects, particularly upon those pertaining to preventive medicine. Such results are so desirable that we propose to give in brief the methods devised by the Academy of Medicine, in the hope that it may aid other localities.

The Committee on Public Health of the New York Academy of Medicine was established in its present form about five years ago. Other committees had preceded it but the

7 A HASTINGS, M D, Malone, died December  
 7 B HEGEMAN, M D, Brooklyn, died December  
 JACKSON, M D, New York City, died January  
 917 LEISER, M D, New York City, died December  
 H NORTH, M D, Dannemora, died December  
 S PAYNE, M D, Liberty, died December 12,

Even in the small societies, a modified system might be adopted, but it would be more difficult in small communities to conceal the identity of the physicians acting upon the committee. Even then it would be understood that the opinion reached was that of a medical society and not of an individual. It would be accepted as the best opinion of the medical profession of that locality.

Appreciation of the efficiency of the Public Health Committee was recently expressed by Mayor Mitchell and several of his Commissioners upon their retirement from office on January 1st. The following is an extract from a letter received from Mayor John Purroy Mitchell: "Among the various citizens organizations which have served the city well in an unofficial capacity, and given to the city departments the benefit of expert advice and consideration of important matters, there is none which has been more unselfish or which has given more valuable technical advice than the Public Health Committee of the Academy of Medicine. I find that no less than seven of the city departments, boards, or commissions have benefitted directly by studies undertaken at their request by this public-spirited professional body."

Such expressions of appreciation from the head of the most businesslike administration New York City has ever had, has heartened the committee to continued effort. It is deeply interested in the work and will be glad to help other communities in the establishment of similar activities. It will welcome the opportunity to furnish information or to answer any questions which may be proposed by others desiring to enter upon such effort. Communications sent to the Public Health Committee, 17 W 43d Street, will receive prompt and cordial consideration.

It is hoped that these suggestions may prove helpful in solving one of the difficult problems which the medical profession is all the time called upon to meet and make it possible to ethically "enlighten and direct public opinion in regard to the great problems of state medicine."

F M C

## THE 112TH ANNUAL MEETING

The attention of the members is drawn to the preliminary program of the one hundredth and twelfth Annual Meeting of the Medical Society of the State of New York, which will be found on page 79 of this Journal.

This meeting will be held during the fourth week of May in the old City of Albany. A city already famed as the birthplace of the State Society and one in which many interesting meetings have been held.

More extended comments are reserved for another occasion, but a study of the program will show that in spite of the many difficulties which the Chairman of the Committee on Scientific Work and the Chairmen of the Sections have had to contend with owing to the unusual conditions created by the war, that it compares very favorably with those of previous years.

It is impossible to mention in detail the many attractive features which the program contains, but all will be pleased to learn that the orator will be the Hon. James M. Beck, who will speak on the "Psychology of the War."

A number of interesting Symposiums have been arranged by the different Sections. The ones on Military Surgery, Medicine and Hygiene being of particular interest at the present time. Among the out of town guests who will favor the Society appear the names of Dr. Lewellys F. Barker, Prof. Clinical Medicine, Johns Hopkins University; Dr. J. P. Crozer Griffith and Dr. Barton Cooke Hirst, of Philadelphia; Dr. Franklin S. Newell and Dr. William Healy of Boston; Dr. John T. Geraghty, Dr. Emil Goetsch and Dr. Guy L. Hunner of Baltimore; Dr. Charles L. Bonfield, Cincinnati; Dr. Hermann L. Kretschmer, Chicago; Dr. Henry S. Plummer and Dr. William F. Bransch, Rochester, Minn.; and Dr. Walter B. Lancaster, Camp Devens, Mass.

A valuable and interesting program has also been arranged by the Section on Public Health in which Dr. Winslow, Prof. of Preventive Medicine, Yale University, and Dr. Charles J. Hastings, President American Public Association, together with a number of laboratory and research workers will participate.

The Society will also be favored by numbering among those who will open discussions such men as Dr. E. Gustav Zinke of Cincinnati; Dr. William D. Fullerton, Cleveland; Dr. Robert L. De Normandie, of Boston.

## Original Articles.

SYPHILIS OF THE EYE<sup>1</sup>

By WILLIAM CAMPBELL POSEY, M.D.,

PHILADELPHIA, PA

WHEN I was invited by your chairman to take part in a discussion on "Syphilis of the Eye," in thinking over the best means of presenting the subject, it seemed to me futile to attempt a review of the various ocular manifestations which this infection may give rise to. In the first place, the changes induced by syphilis in the eye are so numerous and varied, that a dissertation dealing with even the most important would consume much more time than you have been kind enough to place at my disposal, and secondly, I should only be boring you with a repetition of facts with which you are already quite as familiar as I am. The introduction of the Wassermann test and the treatment by salvarsan have, however, during the past few years added much to the certainty of our diagnosis of syphilis and our means of combating the disease, and while the value of both these new diagnostic and therapeutic methods has been largely recognized and appreciated, the almost constant appearance in the journals of new experiences with both has caused me to attempt a review of some of the most notable of these publications, in an effort to crystallize our knowledge regarding these two phases of the broad subject of ocular syphilis.

I will first consider the part played by syphilis in the causation of diseases of the eye. Before the introduction of the Wassermann reaction and the existence of a sure method of diagnosis, figures estimating the frequency of syphilitic ocular affections were very variable. Since the introduction of this reliable test, a number of attempts have been made to arrive at some definite conclusions upon this point. Perhaps the most valuable of these is a study by W. H. Manson, T. J. Mackie and H. E. Smith, who made an examination of the blood of 250 patients, all of whom were suffering from diseases either known to be sometimes caused by syphilis or else of uncertain etiology. With regard to some of the conditions, the numbers are too small to form a basis for any valid conclusion, but the following points may be noted.

In interstitial keratitis the reaction was positive in 88.8 per cent. Since a positive reaction is in itself inconclusive evidence of the presence of syphilis (apart from a few other diseases public<sup>2</sup>), or

referred to the E<sup>ting of the Medical Society of the</sup>  
April 24, 1917

rarely found in this country), whereas a negative reaction is inconclusive evidence of its absence (the authors say that only 75 per cent of cases in the tertiary stage yield a positive result), this percentage tends to prove that interstitial keratitis apart from syphilis must be very rare. It may be noted that eight cases of "strumous" keratitis which were examined all gave a negative result.

Of the patients suffering from iritis and iridocyclitis, 54 per cent were proved to be syphilitic. On the other hand, three cases of cyclitis uncomplicated by iritis all gave a negative reaction, and only five out of twenty-six cases of choroiditis and choroidal atrophy gave a positive reaction. This last proportion is decidedly less than might be expected, especially as cases of myopic choroiditis were placed under a separate category.

Over half of the cases of optic atrophy studied proved to be syphilitic. In the ten cases in which the atrophy was diagnosed as primary, all gave a positive reaction.

Out of thirteen cases of paralysis of the ocular muscles, seven gave positive and six negative results. Of the positive cases four were of the third nerve, one the fourth, one the sixth, and one the sixth and third combined. The negative cases were all of the sixth nerve. This would tend to show that the external rectus, the eye muscle most subject to paralysis, is relatively immune to syphilitic disease.

The paper just mentioned has been supplemented by a further report by the first two authors (Mackie and Manson) who applied the luetin test to fifty of the same patients whom they had previously tested by the Wassermann reaction. The results showed that many patients who give a positive reaction to the first test give a negative to the second, and vice versa. This was especially significant in cases of optic atrophy. Of eight cases already subjected to the Wassermann test and re-examined by the luetin test, five which were negative to the Wassermann were positive to the luetin test, and three which were positive to the former were negative to the latter. In these cases the one test seemed to act as complimentary to the other. Before syphilis can be excluded, it would appear, therefore, to be necessary to apply both.

Perhaps it might be of interest in this connection to quote from John A. Kolmer, "Infection, Immunity and Specific Therapy," Results 1. The reports of Noguchi and of a number of different observers show that the luetin reaction is generally negative in the primary and secondary (untreated) stages of syphilis.

2. In latent tertiary syphilis Noguchi has reported positive reactions in from 80 to 95

per cent respectively, and the reports of others have showed from 64 to 100 per cent of positive reactions

3 In cerebrospinal syphilis positive reactions have been received in from 42 to 80 per cent of cases

4 In congenital syphilis the results have varied within wide limits—10 to 96 per cent of positive reactions In cases under one year of age Noguchi has reported about 23 per cent, and among later cases 96 per cent of positive reactions

5 While a few observers have reported positive results in diseases other than syphilis, it is frequently very difficult absolutely to exclude syphilis, and the general consensus of opinion is unmistakably to the effect that in this country at least, the luetin reaction is specific for syphilis Slight reactions may be obtained in frambesia or yaws and leprosy

6 Second injections of luetin apparently do not give positive reactions in non-syphilitic cases

Another contribution of great value in determining the frequency with which syphilis affects the eye is a paper read before the American Ophthalmological Society last year by Brown and Irons, of Chicago, giving the results of a careful analysis to determine the etiology of 100 patients suffering from iritis Careful attention was given to the history and a complete physical examination was made to detect the presence of syphilis tuberculosis gonococcal infection and infections from teeth tonsils, sinuses, prostate, pelvis or other structures which might give rise to ocular lesions The laboratory examinations included Wassermann tests which were conducted by two laboratories From this comprehensive study, syphilis was found to be the cause of the iritis in twenty-three cases, and in eleven other instances it was associated with other coincident infections, a total of thirty-four In five other cases there was some reason to think that syphilis should also be considered—a total of thirty-nine In the remaining sixty-one cases a searching examination failed to reveal any evidence of past or present syphilitic infection In the words of the authors "So far as one may draw conclusions from this number of cases, it would seem that the widely accepted statement that 50 per cent or more of iritis is due to syphilis may have to be revised Certainly in the absence of other evidence of active syphilis in a patient with iritis, the assumption that the iritis is syphilitic is more likely to be wrong than right"

Let us now consider the second phase of our subject, the treatment of syphilis of the eye by salvarsan

In an analysis made in February, 1914, of

fifty cases of syphilitic diseases treated by salvarsan, Uhle and Mackinnay, of Philadelphia, summarized that the immediate effects are uniformly good and more prompt than can be obtained by mercury Included in the above total was one chancre of the eyelid, ten cases of interstitial keratitis, twenty of uveitis, seven of muscle paralysis, four of optic neuritis and seven of optic atrophy Of the ten cases of interstitial keratitis, six were heredo syphilitic and four were acquired The immediate effects from salvarsan, as in other ocular conditions, were good There was prompt relief from pain, photophobia, lachrymation and congestion A good final result was obtained in all cases within from two weeks to three months As has been the experience of most of us, the authors found interstitial keratitis to be the most resistant of all ocular lesions to antisyphilitic treatment They found, however, the clearing of the cornea to be definite, though slow, after each injection They advised that this form of keratitis should be treated with repeated injections at rather short intervals

In acute syphilitic inflammations of the uveal tract, the results were astonishing This group included seven cases of papular iritis, six of acute iritis, and seven of general uveitis The immediate relief from pain in these conditions was most gratifying and what must be regarded as a good result was accomplished within two weeks in every case

In one case of long-standing choroiditis complicated with an acute exacerbation, the process was stopped within a few days and the general health of the patient considerably improved

In muscle palsies a consistent improvement was noted within a few days, and with one exception, normal function was restored within a few weeks One patient with a partial third nerve paralysis, which cleared up almost completely after one injection, returned six months later, with complete paralysis A second injection (intra-muscular) promptly relieved the ptosis, but a partial paralysis of the third nerve still remained, which however slowly yielded tounctions, administered daily One case of general syphilis developed oculo-motor palsy two months after the last injection of a series of five, which had been administered within five months

In optic neuritis, the results were uniformly good the nerve clearing up within one month in all cases One patient with optic neuritis had received one injection of salvarsan for an iritis seven months previously, and had neglected subsequent treatment A second injection brought about considerable improvement in three weeks, and a cure in five weeks

In seven patients with optic atrophy, no im-

provement in the nerve was noted, nor was the same to be expected. In two cases associated with tabes, the pains were relieved, and the gait and station somewhat improved.

Another paper of value which dealt with the use of salvarsan in interstitial keratitis and in optic nerve lesions, was read by Arnold Knapp before the American Ophthalmological Society in 1915. This well known observer concluded as follows: "We have the impression that the earlier the treatment is begun, the better are the results obtained. In all cases the inflammatory symptoms are quickly overcome. Salvarsan seems to act best in cases with inflammatory symptoms, its action is slight in cases of corneal infiltration without vascularization. The majority of cases seem to do much better with the old treatment. Great improvement in the general health was very noticeable. There are, however, cases which are not benefitted beyond the relief of the inflammatory symptoms and in which the corneal infiltrations do not change. Salvarsan has not been able to prevent the other eye from becoming affected. While the expectation on salvarsan in interstitial keratitis may have been placed too high, I do not share the belief, which many hold, that it is of no value in this disease. The results in the majority of cases, in my experience, if the treatment is persevered in, are very encouraging."

Knapp's patients were given Hg by injections once or twice daily, small doses of KI, and neosalvarsan in five one-half doses at three days' intervals, then after two weeks salvarsan was given in one-half doses every three days for five times. The Hg and KI were then continued. Knapp states that the Wassermann test did not help him any in determining the effect of the treatment, as in all of these cases it remained strongly positive, as has been the experience in all laboratories.

In agreement with the experience of other investigators, Knapp believes that the opinion which was formerly expressed that salvarsan exerted an unusually deleterious action on the optic nerve, producing a rapid blindness with atrophy, lacks confirmation. Indeed, he asserts that "experimental work and clinical experience have shown that salvarsan does not exert any unfavorable action on the optic nerve or any other part of the eye. Unpleasant reactions, the so-called Herxheimer reaction on the part of the optic nerve, can be avoided by beginning with very small doses of neosalvarsan."

Intraspinal treatment with salvarsanized serum as suggested by Swift and Ellis, was employed in the treatment of five cases of optic atrophy, in order to bring the agent into close contact with the diseased tissues. Of the five but one showed improvement. Knapp points out that if the degeneration depends on a degenerative process due to the direct action of

the spirochaete, our aim should be the preventive treatment of these lesions. He urges, therefore, the proper examination of the cerebrospinal fluid and its appropriate treatment long before degenerative lesions come on. Cases of ocular muscle paralysis or those with pupillary symptoms where the optic nerves are still unaffected, furnish a more hopeful field than after actual loss of vision from nerve involvement has set in.

My own experience tallies with that of others, that in order to be efficacious salvarsan should be administered early, before the spirochaete reach the vascular tissues and before they have had time to damage the delicate tissues of the eye. Later results are certainly less favorable, though we have all seen gummata of various part of the eye disappear under its use. Indeed cases have been reported where Argyll-Robertson pupils have reacted again to light following intravenous injections of the drug.

That the administration of salvarsan does not prevent the appearance of new syphilitic symptoms during the period of administration is generally recognized and is probably due, as Stephenson has pointed out, to the presence of nests of organisms which escaped the action of the initial dose.

Although salvarsan does appear to act with astonishing promptness and efficacy in many cases, this is not true of all and there have been numerous reports of unfavorable results. Paralysis of eye muscles, interstitial keratitis, gumma of the iris, papillitis and other ocular lesions have been cited after the use of salvarsan, these complications arising in general quite late after the use of the drug. Sufficient evidence has now been collected, however, to demonstrate that these accidents should not be attributed to the treatment by salvarsan, but result from a progression of the disease, as is evidenced by the fact that additional doses of the drug are usually followed by their disappearance. For a long time there was a general impression that salvarsan acted deleteriously upon the tissues of the optic nerve, and especially in the presence of nonsyphilitic disease of the retina and optic nerve. Gibbard, however, who investigated this phase of the subject observed but two cases of cerebro-nerve disease in 1200 cases in which salvarsan was used and an increase of dosage caused the disappearance of the trouble. Elliott, moreover, found that cases presenting signs of optic neuritis of presumable syphilitic origin act excellently to the drug. Further review of the literature also indicates that there is no ground for the belief that salvarsan has a poisonous effect on any of the ocular tissues. Certainly all evidence is lacking that the drug causes atrophy of the optic nerve through a direct toxic effect.

From my own limited experience, it would appear that the toxic effects wrongly attributed to salvarsan may be avoided by trusting the ad-

ministration of the drug only to those who are properly trained, and that the combination of salvarsan with mercury and potassium iodide greatly augments the spirocheticidal properties of each of these specifics.

In a recent paper read before the College of Physicians of Philadelphia, Fordyce, of New York, said, "In syphilis the optic nerve may be primarily or secondarily involved much more often than the latter. In the former the nerve substance itself without compromising the meningeal covering is attacked by gummatous or endarteritis of the Heubner type, while in the latter there is an extension meningitis. In the former the fluid is usually negative while in the latter it is positive. During the era before our systematic laboratory examination in these cases an isolated optic atrophy was diagnosed as latent tabs and Nonne still regards such cases as tabetic in view of the fact that cases of tabs may begin as an optic atrophy and persist as the only symptom for years, as many as twenty. The laboratory findings, it seems to me, give a better indication of the nature of the process, especially in the early cases, and supply more definite data upon which to base a diagnosis and prognosis. Cases of optic atrophy might therefore be classified in three groups:

Group 1 Including those cases where no other physical abnormalities are present and the fluid findings are negative or practically so.

Group 2 Cases which clinically give a history of lancinating pains and have sluggish or absent reflexes in other words, more or less advanced tabs with a positive lymphocytosis positive globulin positive Wassermann and a luetic curve. The blood may or may not be positive.

Group 3 Cases which on physical examination give the findings of tabs or paresis with or without mental phenomena. These cases differ from Group 2 in that the Wassermann is resistant to treatment and a parietic curve is present."

In addition to these groups of cases Fordyce offered the following conclusions: Optic atrophy with a high cell count, positive Wassermann and a luetic curve offers favorable conditions for treatment as is evidenced by the fact that cases have been stationary for two years with negative findings after treatment and with visual fields enlarged or stationary. On the other hand he believes that optic atrophy with negative fluid findings offers no indications for intraspinal treatment.

Fordyce insists that every case of secondary syphilis as a matter of routine should have an ophthalmoscopic examination from time to time. Marked evidence of pathological changes may be present with slight subjective symptoms or impairment of vision, and the condition may be completely overlooked unless one is on the alert for the possibilities in these cases.

In eye syphilis positive clinical manifestations are frequently present with a negative blood, as in a man who developed in his early secondary period, one month after treatment with four full doses of salvarsan, a perivasculitis. Under mercury the eye lesions regressed and with its discontinuance a relapse from a new focus took place which again improved under further therapy. Three months after the cessation of all treatment his Wassermann was four plus.

#### Discussion

DR PERCY FAIRLIE, New York. Dr. Posey's review must have been listened to by all of us with as much interest as profit. It was clear, terse, and authoritative. The ounce of accurate observation, worth more than the pound of speculation. The practical value of the Wassermann and luetic tests in the diagnosis of ocular infections can hardly be overestimated yet we are still confronted, although to a lesser degree than formerly, with the dilemma as to whether in iritis a keratitis, is specific, sensu strictiori, or whether it is an iritis in a syphilitic. Here as of old we are still dependent for our final decision to a certain extent on the subsequent course of the disease under experimental treatment, the diagnosis ex juvantibus, and this fortunately is no drawback in the treatment of even a concomitant syphilis is of great importance for the patient. The discrepancy in the results of salvarsan therapy are only partly explained, I think, by the fact that this arsenic derivative is mainly or almost exclusively a spirocheticide and that its main purpose is the sterilization margin, about which we have heard so much when it was first introduced. Mercury in the form ofunctions or injections of soluble or suspended salts are still our stand by where we have to deal with inflammatory exudates and specific cellular neoplastic formations. Here also the iodides have their sphere of usefulness. The degenerative processes and the various poorly defined and little understood conditions which we cover with the term "para-syphilitic," do not yield readily to salvarsan alone even when administered intramedullary in the form of salvarsanized serum. We know that the destruction and breaking up of numbers of the spirochete introduce into the blood a foreign albumin or protein which besides producing the characteristic Herxheimer reaction or a neurotoxicity may not at all improbably have a selective toxic action on nerve cells or ganglia. In spite of much that has been done there are many details which have still to be worked out. Not the least important feature is the practical benefit involved in the possibility of making an early diagnosis of virulent active syphilis by means of the Wassermann test, and preventing the spread of the disease by a prompt series of salvarsan injections and the following sterilization, in case of a positive reaction. This is the prophylaxis for the community. The pre-

ventive medical aspect for the patient lies in the clue to early specific treatment with the hope and large probability of preventing the future development of tertiary lesions which were responsible for so much mischief

ALBERT C SNELL, M D, Rochester The study of Dr Posey's paper immediately impresses one, not only of the necessity for a careful study of the etiology in all cases of serious eye disease, but also of the great value of doing a routine Wassermann examination in this class of cases. With a state laboratory at Albany at our disposal there is no excuse for the physicians of our state omitting this valuable aid in determining the etiology of serious ocular inflammations.

I wish to call to your attention the possibility of mixed infections, or at least to the fact that there are many cases, especially of iritis and keratitis, in which there are other underlying causes in addition to a specific infection which coexists and which contribute to the trouble, or at least seem to precipitate the onset of symptoms. I have had a patient under my care with a keratitis, of specific etiology who has had numerous recurrent attacks which are invariably brought on after acute alcoholism. Another patient who had been treated for iritis, Wassermann being positive and all local symptoms having completely disappeared under salvarsan, had a recurrent attack after exposure. This young man was a chauffeur and drove the machine five to six hours, being exposed to cold wind and dampness. Following this there was a severe recurrent iritis. When these cases of recurrence have been observed it has been my experience that the recurrent attack is usually of a comparatively short duration, under further salvarsan treatment.

I wish to give a word of caution in regard to prognosis in all specific cases. I believe that it is a very difficult matter to foretell the outcome of these cases. I have seen a very severe case of optic neuritis in a woman of middle age in whom I expected optic atrophy and blindness to ensue make a recovery with 20/30 vision which she has maintained for eight or ten (8-10) years. Other cases under my observation, in spite of salvarsan and combined treatment have terminated very seriously within a short time. The age of the patient is often regarded as a factor in our prognosis but I am inclined to believe that there are strains of specific infection of different intensity, and that these have far more influence on our prognosis than has the age of the one infected.

DR MALCOLM C ROSE, New York City Dr Fridenberg has brought out in his discussion the importance of treating these cases with the same thoroughness now, as before the introduction of salvarsan and neosalvarsan and not tying our

hopes to one anchor or one special form of treatment. Dr Snell's illustrative debauch case where the iritis returned after every debauch, emphasizes the importance of the nourishment of body cells. Anything that interferes with the secretory or excretory functions of the body will lower the resistance of the tissues of the eye.

Since protein food is eliminated by the kidneys, is it not a mistake to feed meat so freely in these disturbed conditions?

## SYPHILIS OF THE EAR

By BRADFORD A RICHARDS, M D,  
ROCHESTER, N Y

THE subject, syphilis of the ear, is a large one and there is a great volume of literature, both recent and older, pre-salvarsan, from which the writer hopes he has made an abstract that will serve a useful purpose.

I am indebted particularly for the matter presented to the masterly and systematic review of recent literature by J S Fraser FRCS, of Edinburg, and to the work of Dr Homer F Swift and Arthur W M Ellis, done in the Rockefeller Institute for Medical Research.

It is interesting from the fact that in some of its phases there is still active discussion and wide variance of opinion. Its importance is beyond question.

Congenital syphilis ranks next to epidemic cerebro-spinal meningitis and middle ear suppuration as a cause of deaf mutism. Probably many cases of so-called congenital deaf mutism are due to intra-uterine syphilis or syphilitic changes taking place in the ears before the child has learned to talk.

On the other hand, statistics on deafness occurring in children with congenital syphilis vary from 33 to 60 per cent.

Acquired syphilis of the ear is also of great importance on account of the frequent occurrence of sudden and severe deafness in the secondary and tertiary stages. Again, illustrating the importance of syphilis in ear diseases, a positive Wassermann reaction was found in 77 out of 209, or 36 per cent, in a recent examination of cases of unexplained nerve deafness, collected from several sources.

*Congenital syphilis* may occur in intra-uterine life. Alexander states that it is then of a very severe type. The new born infants show all the signs of congenital deafness and the static labyrinth is not excitable. Fraser examined both ears of a seven months' foetus and found otitis media on both sides, abnormal spaces between the cartilage and periosteal bone, small cell in-

\* Read at the Annual Meeting of the Medical Society of the State of New York at Utica April 24, 1917

filtration of the eighth nerve and possible changes in the labyrinth. Gruenberg has demonstrated spirochetes in microscopic sections from the ear of a seven months' foetus, especially in the cochlear and vestibular nerves, the facial nerve, and in the tympanic and carotid plexuses. Spirochetes were also found in the neighborhood of the vessels of the middle ear as well as in the narrow spaces of the ossicles. There were none found in the labyrinth or the nerve endings in the inner ear. In some cases a middle ear infection involved the labyrinth, by rupture of the annular ligament and consequent invasion of the vestibule through the oval window. In others evidence of meningitis and neuritis of the eighth nerve have been noted.

#### IN YOUNG CHILDREN

A middle ear or eustachian catarrh running an unfavorable course is a common manifestation of congenital syphilis of the ear. The exudate may absorb but the drum is left thickened and retracted and severe deafness remains. Treatment does no good. McBride states that in children congenital syphilis often gives rise to a combination of middle ear catarrh and labyrinthine deafness. According to Cheatle eustachian obstruction occurs during the snuffling stage of congenital syphilis. He also holds that syphilis alone will not cause suppurative otitis media. Pyogenic organisms are necessary. From this it would appear that if cases of middle ear catarrh do not clear rapidly after appropriate treatment and especially if severe deafness remains, it is advisable to have the Wassermann or Noguchii reaction tested.

#### CONGENITAL SYPHILIS IN CHILDREN USUALLY OCCURRING BETWEEN SEVEN AND THIRTEEN YEARS

Most observers agree that the drum membranes in these cases are thickened and retracted pointing to past attacks of otitis media. Brilliance says, "In hospital practice I have seen the tympanic membranes becoming white and thick while the cornea was clearing. This interstitial myringitis is comparable with the disease of the cornea and may spread inwards from the circumference of the drum." Politzer states that most labyrinthine cases of this type are associated with middle ear catarrh or suppuration. Fraser quotes a case at length in his abstract and asserts that there is invasion of the labyrinthine bony capsule at least in some cases by syphilis or a mixed infection giving rise to chronic osteomyelitis or a labyrinthitis and quotes Walker Downie's case in both of which the pathological findings support his view. There are also types of late congenital syphilitic affections of the ear in which the infection is due to a meningitis spreading to the

labyrinth. It is claimed that this is substantiated by the findings of Kretschmer and Tobler who found lymphocytes in the cerebro spinal fluid in older cases of congenital syphilis.

The clinical aspect of these late cases is somewhat as follows. Deafness may be gradual or sudden in its development and is generally severe. It may or may not be accompanied by giddiness and disturbance of balancing. It is generally bilateral. Practically all observers agree that the drum heads are seldom normal. As a rule bone conduction is greatly shortened or absent and the watch is hardly ever heard either by air or bone conduction. The upper tone limit is reduced and lower tones normal or rused. Rinne's test is usually positive and Weber is usually heard better in the better hearing ear. Barany states that the vestibular reactions are practically absent in all cases of congenital syphilis. Hennebert first called attention to the presence of compression nystagmus in some of these cases. Compression in the canal by means of a rubber bulb causes slow movements of the eyes to the same side while aspirations brings about slow movement to the opposite side.

At the same time rotation reactions are always absent and caloric reactions reduced. This reaction is variously explained. Barany thinks it is due to excessive mobility of the stapes. Alexander that it is due to a change in the nerve endings. Fraser explains it as being due in some cases at least, to an erosion of the bony walls of one of the canals. The lumen is filled with syphilitic granulation tissue so that rotation and caloric reactions have little influence, but the more powerful pneumatic test is able to bring about an abnormal or reversed vestibular reaction. Diagnosis is assisted by a history of the mother's pregnancies. Usually there is a history of several miscarriages of lengthened periods, or still births until a child is born. An examination of other members of the family may assist. A wizened appearance at birth, enlarged liver, spleen and lymph glands, nasal snuffles, diseases of long bones and those of the head, scars about the angles of the mouth are among the signs to be noted in very young children. Later Hutchinson's well-known triad, notched or peg incisor teeth, deafness and cloudy corneae are to be sought for. Other signs are defective mentality, scars on the palate, high palatal arch, saddle nose, perforation of the nasal septum and ozoena.

In the eyes choroiditis or old iritic adhesions as well as the cloudiness resulting from interstitial keratitis. Noguchis skin test or the Wassermann reaction of course may be applied. Fordyce states that the Wassermann reaction is of great value in recognition of syphilis in obscure conditions in children. Treatment should be ante natal wherever possible.

Findlay and Robertson treated seven pregnant women with salicylate of mercury injections

They all went to term and the babies were healthy. The earlier treatment is applied the better, but children are rarely brought in when deafness comes on early. Ordinary treatment seems to be of little use. Several cases are reported in which deafness appeared while being treated with mercury for interstitial keratitis. Various authors describe combinations of mercury and iodides. Cheatle advises thyroid extract with the above. Salvarsan does not seem to be greatly esteemed. Dench has seen benefit with pilocarpine and recommends it highly. Politzer would use pilocarpine first and then combined mercury and iodide treatment. On the whole treatment is not satisfactory. If there be speech every effort must be made to retain it and the child should be placed in a deaf mute school as soon as possible.

#### ACQUIRED SYPHILIS OF THE EXTERNAL EAR

Considering the etiology, primary acquired, or Hunterian chancre of the external ear is rare. Kissing biting piercing the ears with infected instruments and infected towels are among the means responsible for its occurrence. Sohier Divant collected thirty-two cases in 1906. Politzer does not mention having seen one.

#### SECONDARY SYPHILIS OF MIDDLE EAR

Secondary syphilis of the external ear is more common. Knapp states that condylomata of the meatus develops more frequently when there are other parts of the body similarly affected and begin as red efflorescences gradually enlarging and followed by diffuse swelling of the walls with secretion. He observed a case where bilateral perforation of the drums followed. Pigmented scars may follow healing or depressed areas may be observed devoid of hair.

Despres observed five cases with papules of the external ear out of 1200 cases. Many observers have noted secondary lesions of the external ear four to seven months after infection. The condition is most frequently secondary to a middle ear suppuration. They may be severely painful. Lang reports a case of a papule on the external surface of the drum. Bronner reports deep ulceration in the external meatus in secondary syphilis. General treatment is supplemented with calomel dusting pencilling with silver nitrate or a concentrated chronic acid solution. Irrigations if ordered should be of solutions of bichloride of mercury. Prognosis is favorable.

#### TERTIARY SYPHILIS OF THE EXTERNAL EAR

W. M. Mollison reports a syphilitic ulceration of the external auditory meatus. Baratoux saw a gumma of the membrana tympani which broke down. At the same time there were gummata

of the face and auricle. It seldom occurs without a simultaneous affection of the middle ear.

The ulcers have a fatty base with characteristic steep, infiltrated and sharply defined margins. Two cases are reported by Politzer. Buck and Heuler report cases.

#### PRIMARY SYPHILIS OF THE MIDDLE EAR

Probably primary sore of the eustachian tube orifice is due for the most part to infected instruments. West collected 100 cases. It should be rare.

Secondary Syphilis is common in the middle ear.

The otitis may be a simple catarrh, which readily disappears with no trace remaining, an adhesive form with hyperostosis, or go on to suppuration. The symptoms of the suppurative cases are much like those of the ordinary forms except that loss of tissue may be a prominent feature and deafness is apt to be more marked and its onset more rapid. Tinnitus is usually prominent and giddiness may be present. Bezold holds that most cases of secondary acquired affections of the labyrinth are associated with middle ear disease. Bone conduction is usually shortened or lost.

Diagnosis is not easy as syphilitics may have an ordinary infection. However, great deafness thickened drums unusual loss of tissue, shortened bone conduction and resistance to ordinary treatment are points that should arrest attention. Cerebral complications are rare and under general treatment in robust persons, prognosis is good if seen early and if the affection is mild. Otherwise it is less favorable and destruction of tissue may be extreme.

#### TERTIARY SYPHILIS OF THE MIDDLE EAR

The otitis may be of any degree. There may be ulceration of the mucosa and deeper necrosis may follow with possibly facial paralysis. There is no characteristic appearance but loss of bone conduction and rapid loss of tissue are in favor of syphilis. Politzer states that it usually follows a naso-pharyngitis, ulceration or gumma and may be associated with labyrinthine disease, in fact usually is, and is then a syphilitic panotitis. This affection may not be due to the spirochetes of syphilis alone but their presence is probable as syphilis alters the clinical course of the otitis media. There is poor resistance and little power of repair in these cases.

Gruenberg reports the case of a male aet 21 who had had syphilis for two years. The naso-pharynx was ulcerated. Within six months of infection there was nerve deafness with tinnitus. Death occurred from syphilitic cachexia. Post mortem, the left ear showed serious exudate in the tympanum with thickening of the mucosa,

the drum head was intact. The incus was embedded in inflammatory tissue and the bony wall of the promontory was thickened. The bony capsule of the cochlea showed wide marrow spaces. In the membranous labyrinth there were only slight changes—atrophy of the spiral ganglion in the basal coil. There were no syphilitic changes in the vessels. McBride records the case of a man with a copious middle ear suppuration, pain and headache on whom it was proposed to do a mastoid operation. A history of syphilis was then obtained and he promptly cleared up under treatment.

I have found an interesting case in my records O. S. M., Oct 41, male, a clerk. Complaints of passage of soft food through the nose when eating. Present history: Has had a sore right central incisor tooth for two months which his dentist has drilled and treated. The roof of the mouth behind this tooth has been uncomfortable for three or four weeks and passage of food began about a week ago. He advanced nothing important in his personal or family history.

Examination: There is a small necrotic piece of bone three quarters of an inch back of the right upper incisor teeth showing through a perforation in the mucous membrane making a small passage about the necrotic bone to the right side of the nose. X-ray examination shows this bone to be about the size of an almond and separated.

Thinking that this was the result of local necrosis following an abscessed tooth and possibly due to the use of arsenic as a dressing, I removed the bone and had a small perforation left. A day or so later an ulceration began on the right side of the septum which looked as if it would rapidly perforate. I then obtained a history of a lip chancre ten years back. A Wassermann reaction was tried at once and the report was three plus. At about the same time he developed a left sided middle ear suppuration with giddiness, tinnitus and a moderate loss of hearing. Treatment with salvarsan and intravenous injections of mercury salicylate given by Dr. Ruggles of our city cleared up the whole process rapidly and there has been practically no loss of hearing, the septum did not go on to perforation and all that remains today is a pin point perforation in the roof of the mouth which may be easily closed but which gives no trouble. It may be laid down that these cases of tertiary syphilis of the middle ear are common and are usually associated with internal ear disturbance. They may be suspected when bone conduction is greatly shortened or loss of tissue seems unusual.

#### LABYRINTH AND EIGHTH NERVE AFFECTIONS

At present there is much discussion and difference of opinion as to whether one can distinguish between syphilitic disease of the labyrinth and the eighth nerve. The galvanic reaction is returned

in affections of the labyrinth alone and not in affections of the eighth nerve, but there are few instances reported and data are meager. Nonne considers the ear disturbances to be due to a basal meningitis involving the roots and points out the frequency of associated lesions of other cranial nerves. Such changes in the spinal fluid, in these neuro-labyrinthine cases, as abnormal cell counts, positive Wassermann reaction, the globulin and colloidal gold tests serve to determine the activity of a syphilitic process and even to distinguish pathological types of syphilis affecting the cerebro-spinal system. Ellis and Swift recently made a complete report of seven such cases from their work in the hospital of the Rockefeller Institute for Medical Research. Rosenstein collected five cases from the literature with necropsy; two showed lesions of the nerve stem, one of the nuclei and roots and one of the nerve roots alone. On the other hand some observers, Moos, Geynsee, Moos and Steinbrügge together have found changes in the labyrinth with infiltration of small cells, degeneration, thickening and extravasations in various parts as well as the acoustic nerve, which suggest that there is an early plastic exudate in the labyrinth, similar to that found in syphilitic iritis. Beck finds bone conduction more or less shortened in 80 per cent of syphilitics though hearing may be normal and attributes this to increase of intracranial pressure. After lumbar puncture in some of these cases bone conduction became normal but the shortening soon returned. This disturbance was only present with the advent of constitutional symptoms and the appearance of the Wassermann reaction. Frey states that cases of neuro-labyrinthitis in secondary syphilis are more common than is generally recognized. In presyphilitic days Habermann reported sixty-six cases of specific disease of the eighth nerve and of these thirteen were in the secondary stage. Since Habermann reported these cases, Meyer working in the same clinic has seen sixty-five, 20 per cent within three to ten weeks of primary infection and thirty within the first year. Politzer reports a case in which the labyrinth symptoms developed seven days after the appearance of the primary sore. Meyer reports labyrinthine symptoms three weeks after the primary sore. Rozier reports two cases in which similar symptoms developed before secondary lesions. Stumpke holds that this type of ear disturbance is common at the onset of secondary symptoms and that it is due to an infiltration of the labyrinth. Meyer says that the ear disturbance appears most commonly in late secondaries with recurrence of a rash. Didsbury reports a case of a man who became deaf within a few days, four months after infection. Since beginning this paper I have seen at the clinic of the Rochester General Hospital a man J. G., Oct 51, who complained

of being unable to hear, of noises in the ears and a spot like a fly before the right eye. About three years ago he had a hard sore. Three months later he had a sore throat, ears itched, noises in the ears, was dizzy, became suddenly deaf and his eyes shook. He began treatment three months after these symptoms which consisted of mercury and iodides which he has been taking at intervals since with no improvement in the hearing or noises. Two years ago his vision became cloudy in both eyes which has cleared up leaving this spot of which he complains. He had never had any trouble with his ears before he had syphilis.

**Examination.** A rather tall, spare man who looks ten years older than he says, with blotchy skin and wide open staring expression and attitude of strained attention. Both external canals are scaly and there is no secretion of wax. The drums both have a thickened and sclerotic look. There is no marked retraction in either.

- |    |         |                                |                    |
|----|---------|--------------------------------|--------------------|
| 16 | D V A C | not heard right or left        | Vibrating strongly |
|    | B C     | not heard                      |                    |
| C  | A C     | heard slightly greater to left | Vibrating strongly |
|    | B C     | not heard                      |                    |
| C2 | A C     | heard well right and left      | Vibrating strongly |
|    | B C     | not heard                      |                    |
| C4 | A C     | heard well right and left      | Vibrating strongly |
|    | B C     | not heard                      |                    |

Galton whistle heard through all tones to the top of the scale in both ears. He could only hear the loudest shout in the left ear. He could not hear voice sounds in the right. Caloric test with cold water. On syringing the right nystagmus developed quickly to the left. No response on the left side. Turning to the right, no response. Turning to the left nystagmus to right. Pupils contracted but react quickly to light, accommodation and consensual stimulation. No weakness in the eye muscles and no nystagmus caused by looking in any direction the head in any position.

Rombergism present. Gait unsteady, especially with the eyes shut. Knee jerks exaggerated as well as the radial and periosteal reflexes. Finger to nose test with eyes shut, right uncertain, left with gross shaking. Diadokokinesis not present. Pupils dilate with difficulty under cocaine solution of 4 per cent and old pigmented choroidal scars noted in both fundi. Nothing of note in the nose or throat.

On March sixth he had an initial dose of salvarsan intravenously. There was no improvement in the hearing for a week. I then gave pilocarpine gr 1/6 t i d and next day there was a decided improvement in his hearing for conversation which still continues.

Beck finds giddiness and disturbance of balancing common, in a study of six hundred cases of secondary syphilis. In some, nothing can be found in the ears or central nervous system. In others there is a central nystagmus and cerebellar ataxia indicating change in the posterior cranial fossa. Others are of vestibular origin showing alteration in galvanic irritability. Giddiness and tinnitus are present in most at the onset. Politzer speaks of the frequent association of enlarged glands of the neck. Hearing is lost gradually and varies in degree, is usually bilateral and greater on one side than the other. Functional tests show an eighth nerve affection. Tinnitus is severe and lasting. Vestibular symptoms vary in degree from a slight giddiness to vomiting and disturbance of balancing. Isolated vestibular disturbance has been noted by Beck, Barany, Bondy and Neuman in secondary syphilis of the inner ear in either presalvarsan days or without the use of salvarsan. Beck believes that the cochlear branch is more sensitive to toxins, including quinine, salicylates, arsenic and syphilis. In unilateral cases of deafness Weber is lateralized to the better hearing ear. In bilateral to the better hearing ear or if deafness is total bone conduction is not heard at all. Rinne is positive in severe cases, and high tones not as well heard as low. Prognosis is better in secondary cases and in those treated early, than in those that appear later and are treated late. According to Ellis and Swift those cases seen early and treated with large doses of 606 controlled by evidence gained from spinal fluid examination do better than late cases, or those who get insufficient amounts of salvarsan. Walker and Haller find that patients with recent or late syphilitic meningitis, cerebrospinal meningitis, tabes and general paresis of the insane are markedly improved following the combination of intravenous salvarsan and intraspinal salvarsanized serum (Swift and Ellis method) and those who fail to improve under salvarsan alone do improve both in symptoms and in spinal fluid findings under this double treatment. Dench, by using pilocarpine and iodide of potassium to saturation, has had gratifying results in many, including old cases. Alexander contends that it is dangerous to give 606 alone if there be involvement of the eighth nerve and supplements it with mercury. On the other hand Citelli reports three cases in which after all other remedies had failed were cured by 606. In the tertiary stage these neuro-labyrinthine cases are quite common. They are usually associated with paresis of other cranial nerves such as the facial, oculo-motor, or glosso-pharyngeal. It is likely, therefore, that they are a form of gummatous infiltration of the brain membranes at the cranial base. Cheatle reports three cases. In one there was a gummatous mass to be felt in the naso-pharynx. Harmon Smith records a case of deep necrosis

of the temporal bone with double optic neuritis, paralysis of the facial and glosso pharyngeal nerve, deafness and disturbance of balancing necrosis extended through the vestibule and cochlea to the apex of the petrous portion and backwards to the foramen magnum. Death occurred in spite of vigorous anti-syphilitic treatment. Acquired gummatous disease of the eighth nerve is held by Rosenstein to be rare as compared with the class just discussed.

Ballance reports an interesting case of a gentleman suffering from chronic deafness of the right ear and who was suddenly seized with persistent vomiting, extreme vertigo, distressing tinnitus and total deafness in the right ear. There was a history of syphilis. The administration of specific remedies restored him to health. Three previous attacks had occurred and as the deafness and other symptoms disappeared, the cause was thought to have been one of gumma involving the posterior surface of the petrous bone, which by pressure on the auditory trunk had induced the symptoms, and that the delicate structures of the labyrinth had not been directly involved.

According to W. A. Turner a syphilitic palsy of the facial nerve is commonly associated with palsy of the auditory nerve on the same side, so that a combination of complete unilateral facial palsy with deafness on the same side is pathognomonic of a basal meningeal lesion and suggestive of syphilitic causation. Several cases of diplegia facialis with bilateral deafness are on record due to gummatous infiltration of the meninges in the posterior fossa.

The changes in the auditory nerves of tabetic individuals probably develop on a metaluetic basis in most cases. Morpugo and Marina in a clinical investigation of fifty three tabetics found only ten with normal hearing. In thirty-five who were hard of hearing Rinne's test was positive. In thirty-five cases Weber was lateralized only eleven times to the more affected side. Statistics as to the incidence of disturbance of hearing in tabetic individuals varies from less than 1 per cent to nearly 75 per cent. According to the cases so far investigated anatomically the disturbances of hearing are due to an atrophy of the acoustic nerve in some or all of its parts.

According to Politzer disturbances of hearing occasionally develop in the early stages of locomotor ataxia, but usually only in advanced stages of the affection.

Deafness develops progressively, seldom rapidly, is accompanied by severe tinnitus and is generally bilateral. Dizziness is a common symptom. Bonnier states that this is due to a tabetic disease condition of the nucleus of the vestibular nerve. Not all cases of disturbance of hearing in the course of locomotor ataxia are due to this affection of the nervous system. Obvious changes

in the middle ear or symptoms of oto sclerosis with a striking negative Rinne, would be regarded as the cause of the hardness of hearing.

There is great difference of opinion as to whether or no salvarsan should be employed in the treatment of syphilis of the neuro labyrinthine type. As we have seen cases of this type were by no means uncommon in the presalvarsan days. The question is whether these cases have become more frequent since salvarsan has been used.

Alexander believes that syphilitic neuritis of the eighth nerve was rare before 606 and blames it for the supposed increase. Ehrlich, on the other hand claims that the nerve trouble is due to the disease and not to the remedy. He maintains that in certain localities such as osseous canals where the circulation is sluggish the spirochetes escape the action of the remedy and may proliferate causing inflammation and consequent swelling and pressure upon the nerve with functional interference. Nichols suggests that as most of the spirochetes are killed upon the exhibition of salvarsan there is no natural resistance established and an overlooked focus in the nervous system may take on unopposed growth. Genneerich holds much the same theory and points out that these relapses often occur with the appearance of the secondary eruption when in untreated syphilis there is little resistance to local expansion.

Since the use of salvarsan statistics have varied tremendously on this point. Benario collected sixty two cases of nerve affection out of 14,000 injected. On the other hand Alexander says that he saw more cases of labyrinth disease after the use of 606 in four months than he had seen in seven years prior to its use. Zeisl and Botella collected 26 out of 266 injected. Genneerich in 1914 reported only two relapses of any kind seen in the enormous amount of material at Kiel where however cases are properly controlled and the treatment most thorough. These nerve relapses occurring after salvarsan may appear early or late. The trouble may come on within a few hours after injection.

This is generally held to be due to the Herxheimer reaction and is characterized by an isolated affection of the vestibular apparatus. Rapid recovery is the rule. Beck records several cases of this sort. In one six hours after injection there was marked giddiness and nausea with loss of vestibular reactions on one side. By the next day it had cleared up. The late form may make its appearance anywhere from one to six months after injection. Beck records the case of a male who received an injection of salvarsan at about the first appearance of secondaries. Six weeks later there was tinnitus and deafness in both ears. The vestibular apparatus showed loss of reaction. Arsenic was found in his urine four months after. He was treated with salicylate of mercury.

The vestibular apparatus recovered but the deafness remained. In several of the reported cases there was a coexisting middle ear suppuration. Ehrlich and many other observers during the last few years contend that many of the relapses were due to inadequate treatment and that if enough salvarsan had been given they would not have occurred. Many of these cases are shown to be due to a syphilitic meningitis and these as well as syphilitic affections of the inner ear have been improved by salvarsan. On the other hand a case of deafness followed the use of salvarsan in a case of lichen ruber where there was no syphilis and no ear trouble. Arsenic is a nerve poison and salvarsan fails to cure the condition.

The weight of the late opinion is that salvarsan should be used in these cases in combination with injections of a mercury salt, particularly where the manifestations of syphilis are active and the spirochetes are abundant. In latent lues more benefit seems to be derived from the old fashioned mixed treatment, that is, mercury and iodides in a liquid medium than from salvarsan or salvarsan and potassium iodide. Fordyce says it cannot be emphasized too frequently nor too emphatically that the fate of a syphilitic individual depends largely upon the early diagnosis and the intensity with which his treatment is carried out in the first six months.

It seems to the reader that in a general way the greatest hope lies along the line of prevention that the disease syphilis should be reported and then that it should be the duty of the state to enforce treatment and control of the individual until he is made reasonably safe to the community. It is only in some such fashion that we may expect to reduce this scourge.

### Discussion

DR EDWARD B. DENCII, New York City. In considering lues as it affects the ear, we may divide the consideration of the subject as follows. First the effect of a syphilitic infection upon acute inflammatory processes within the middle ear and the adjacent pneumatic spaces, and secondly the effect of such infection upon the perceptive mechanism. Under this latter head we must consider the effect of the disease upon both the auditory and static portions of the labyrinth.

Under our first heading, the influence of lues upon acute inflammatory processes, we should bear in mind that any acute, suppurative process involving the middle ear and mastoid may be influenced by a syphilitic taint. Cases of this kind have come under my observation. In one case a patient with an obscure history of acute middle ear inflammation, with profound deafness, some vertigo and facial paralysis, and with

evidence of mastoid involvement came under my observation. At the time of operation there was extensive breaking down of the entire mastoid with large exposure of the dura in the cerebellar fossa. A previous Wassermann at another hospital had been reported negative. The facial paralysis improved as a result of the operation, the vertigo disappeared and the hearing improved. The patient, however, complained of severe headaches and the wound refused to heal. Two subsequent operations were done, on each occasion wider and wider areas of dura being exposed until a large area of dura was exposed in the middle cranial fossa and cerebellar as well. The bone removed was waxy, and the underlying dura thickened and apparently covered with exudate. There was absolutely no repair in the wound. A second Wassermann showed a strong positive reaction. Anti-syphilitic treatment with the administration of salvarsan was followed by complete recovery, and the patient is well now, five years after the operation.

In a second case at an acute mastoid operation, erosion of the dura was found leading into an abscess cavity in the brain. This patient was syphilitic and recovered under anti-syphilitic medication. The brain abscess was a broken down gumma.

In a third case a patient was seen in consultation after a radical operation had been performed. The operative cavity was perfect but the patient complained of uncontrollable headaches. In this case the Wassermann both of the spinal fluid and of the blood was negative. There was a luetic family history, however, and all the symptoms disappeared upon anti-syphilitic medication.

These three cases are cited to show the importance of a thorough investigation as to a possible syphilitic taint, in all cases where actual suppurative lesions do not follow their actual surgical course to recovery.

In this connection I might also mention another case in which the dura was accidentally injured during a radical operation. This patient made a complete recovery but later came back to the hospital suffering from intense headache. Naturally a brain abscess was suspected. A positive Wassermann in this case cleared up the diagnosis. A year later the patient returned with vertigo, intense headache, and an acute mastoiditis upon the opposite side. An operation upon the acute ear followed by hypodermatic injections of mercury cleared up this case perfectly.

In a certain number of cases we have no suppurative lesion to contend with but the disease attacks the perceptive apparatus alone. Classical reaction in a case of syphilitic involvement in a perceptive apparatus, is a preservation of the lower tone limit, a lowering of the upper tone

limit, a loss of bone conduction and a profound impairment of hearing with or without vertigo. By this combination of symptoms, I have frequently made a diagnosis of lues even although the disease has been denied by the patient, and in many cases where there could be no question as to the fact that the infection had been innocent. In some cases of this class the auditory portion of the labyrinth seems to suffer most while in other cases both the auditory and static suffer. When we have a condition of this kind we usually find that the static symptoms are relieved as a result of properly applied antiluetic treatment. While some improvement may occur in the hearing in these cases those instances in which the hearing is very greatly affected almost never show any great amount of improvement as a result of medication.

A word may not be out of place here as to certain conflicting reports upon the Wassermann reaction. In a number of cases I have had one observer state positively that the Wassermann was negative, and yet subsequent examination by another has shown a strongly positive Wassermann. In doubtful cases it should be remembered that not only a blood Wassermann should be taken but also a spinal Wassermann, as frequently the blood will show a negative reaction although the spinal fluid may be positive. When this occurs we probably have to deal not with a lesion of the labyrinth but a low grade of meningitis about the auditory nerve trunk.

The changes in the middle ear spoken of by Dr. Richards that is thickening of the drum membrane, loss of lustre and other physical characteristics mentioned by him, while they do occur in luetic cases have not usually impressed me as due primarily to the luetic lesion. I have been inclined to regard these cases rather as due to a chronic non suppurative otitis media, as the physical signs are practically the same in specific and non specific cases. That a chronic non suppurative otitis media occurring in a syphilitic will progress more rapidly than in a patient without this taint I am not prepared to deny.

Dr. DAVID A. RICHARDS. The case reported was not congenital but acquired. The ear symptoms began three months after primary infection before it rashly developed. I have never had the opportunity of examining a case of congenital syphilis anatomically and have quoted I. S. Travis and other cases.

## REMARKS ON INTRACRANIAL TREATMENT OF SYPHILIS OF THE OPTIC PATHWAYS AND OPTIC ATROPHIES\*

By MARK J. SCHOENBERG, B. A., M. D.,  
NEW YORK CITY

THE question of individualization of treatment of lues of the cerebrospinal system and optic pathways depends on a number of facts and suppositions derived from our knowledge (1) of the patient, (2) of his localized or generalized lesions, (3) of the peculiarities of the spirochaetes and (4) of the curative agents to be used.

Let us consider a few of the most salient points of this subject.

1. The question of spirochaetes is not only of bacteriological interest but also of therapeutic importance. Neisser and others have found that at the time of the appearance of the primary syphilitic lesion, the entire organism is more or less saturated with spirochaetes. There is a general spirochaetemia. Later on the micro organisms settle by predilection in certain parts of the body where they may become encapsulated and inaccessible to immune bodies or to treatment. Among the inaccessible places where the spirochaetes become lodged, the parenchyma of the brain, spinal cord and possibly of the cranial nerves are frequent ones. There they may remain for years without giving symptoms. That there may be a silent symptomless period in the tissues containing spirochaetes, there is no doubt. In the syphilitic foetus we may find numerous spirochaetes in organs without showing any microscopic changes in the tissues. Guszman has found spirochaetes in the tonsil of syphilitics which never had any inflammatory symptoms. Levaditi and Yamnouchi have observed a recurrence of keratitis in a rabbit 113 days after the healing of an inoculation (luetic) keratitis. (That shows that the spirochaetes were quiescent in the corner for that length of time.)

Future researches will probably bring forth a number of similar facts regarding the state of latency of spirochaetes in many other organs. But the little we already know suggests to us that the idea we have to keep in mind when we treat syphilis in general and cerebrospinal syphilis in special, is that the cessation or alleviation of symptoms is not a signal to stop treatment. Our endeavor should be to eradicate if possible the silent foe, which are the ones to spring future surprises by local action or by metastases. Furthermore we must not forget that spirochaetes which remain in contact with the tissues for years acquire some properties and lose others. Their virulence and then response to medication must be different from those of the original micro organisms at the time of invasion.

\* Read at the Annual Meeting of the Medical Society of the State of New York at Utica April 26 1917.

2 Not only the spirochaetes but also the tissues surrounding them undergo certain changes which determine the success of the treatment. Neisser thinks that from the long continued struggle between the spirochaetes and neighboring tissues the latter undergo biologic changes which he calls "Umstimmung," or "Alergie." According to him the virgin tissue reacts in the beginning to the invading spirochaetes by setting up a chancre, later on the tissues have undergone a process of "Umstimmung," or "Alergie" and react in a different manner by giving rise to a gumma.

To summarize the above ideas the change of character of the spirochaetes and of the surrounding tissues, as it may be presumed to exist from a long period of symbiosis, the more or less free inaccessibility of the micro-organisms to the general circulation, and consequently to drugs have to be considered as a capital problem in the treatment of cerebrospinal lues and of luetic optic neuritis.

3 Another point to be considered is the following: do we understand the mode of action of the drugs we are employing: mercury, salvarsan and iodides? It seems to be the general consensus of opinion that mercury and salvarsan are spirochaetecides. Neisser and many others think that salvarsan is somewhat stronger than the mercury but they have to be used in conjunction. It is generally agreed that their usefulness is greatest in primary and secondary lesions. As to their action in cerebrospinal lues it seems that when used judiciously and together they accomplish results superior to those obtained before the era of salvarsan. As for those special types of lues, like paresis and primary progressive optic atrophy, neurologists and ophthalmologists seem to have reached the almost unanimous conclusion that both mercury and salvarsan are useless and frequently harmful. The prejudice against two such valuable drugs is based, I think, mostly upon incomplete clinical observations. An accurate knowledge of how salvarsan and mercury act in syphilis and how and why it is injurious in "parasyphilis" of the brain and optic nerves, has yet to be obtained. Salvarsan does not kill spirochaetes in vitro. Ehrlich has found that arsacetin in 2 per cent solution does not kill trypanosomes in vitro, but in animals infected with this micro-organism it cures even in a solution of 1/120000. Levaditi and Yamanouchi say that subcutaneous injections of atoxyl prevent the development of syphilitic keratitis and the growth of spirochaetes in rabbits, while injections of this substance in the anterior chamber has no influence whatsoever. As we see there must be another factor than the drug which is necessary to kill or inhibit the spirochaetes and this may be the production by the living tissue of some substance with spirochaetecidal properties. The salvarsan

and mercury may or may not act directly upon the spirochaetes in the infected organism. We have no facts to prove this. But they surely have a definite action upon the tissues. They stimulate or disturb their metabolism according to the method and dosage of their administration. It is a matter of common knowledge that the general condition improves to a remarkable degree in some luetics very soon after the beginning of an antiluetic treatment. In others (a certain percentage of parietics and primary optic atrophies) the general as well as the local condition deteriorate very rapidly during an antiluetic treatment.

Have mercury and salvarsan neurotropic properties? Do they attack and damage the nervous system? Or are the spirochaetes neurotropic? Nonne thinks that the intact optic nerves are not damaged by salvarsan, and that it is not the salvarsan, but the spirochaetes which are neurotropic. Others hold quite opposite opinions. J. Webster (The Analyst, Vol LXI, Aug 1916) has examined internal organs of nine death cases from salvarsan in England and found the largest amount of arsenic in the liver, spleen and kidneys, and no traces of this substance in the majority of the brains and spinal cord. These findings speak rather in favor of Nonne's opinion. Regarding the unfavorable effect of salvarsan and mercury upon the course of primary optic atrophy and paresis, I cannot accept it as unconditionally correct. Any drug may act injuriously if administered in more than permissible doses and Hg. and salvarsan are no exceptions to this rule. The fact that their action has been found deleterious in paresis and tabetic optic atrophy may prove that they have an elective action upon the nervous parenchyma in these conditions, but does not constitute a final argument against their usefulness if employed in different doses and in a different way than heretofore. It is up to us to work out the finer pharmacological points of the problem and learn which are the permissible doses.

4 A fourth and very important point is the method of administration and route of introduction of the anti-syphilitic drugs in cerebrospinal lues and metalues. In a paper (Journ. of A. M. A., Vol LXVI, p 2054), I brought forth evidence showing that vital stains like trypan blue, injected into the general circulation, do not enter the cerebrospinal fluid and perineuronic spaces of the central nervous system. Other authors have found that in typhoid agglutinins, present in all the humors of the body, are not found in the cerebrospinal fluid. Toxins and hemolytic amoebocytes are also absent from the fluid while they may be found in large amounts in the blood. Furthermore the choroid plexus is a very efficient barrier against all the drugs, like chlorids, bromids, iodides, nitrates, ferrocyanids, salici-

lites, acetates, arsenic, salvarsan mercury (Mestreztz, Sicard J H Catton, Mott), etc. Only volatile substances like ether, chloroform and formaldehyde originating from urotropin, pass into the cerebrospinal fluid. These facts explain why in a certain large percentage of cases of lues and in all the cases of metalues of the cerebrospinal system the old methods of antisyphilitic treatment are of no avail the drugs do not reach the nervous parenchyma. These failures led Swift and Ellis to try the injections of their salvarsanized serum directly into the spinal canal. Since then method has been applied, numerous reports were published in this country and abroad stating that the method is a very valuable addition to therapeutics in certain cases in which the old classical antiluetic treatment had failed completely. But the intraspinal medication also fails in a large number of cases with lues and metalues of the brain and optic nerves. In the same paper just mentioned I showed that intraspinal injections of vital stains do not reach the optic nerves, while intraventricular injections stain them. Should we conclude that our failure in the spinal treatment of a certain percentage of optic atrophies is due to the fact that the spirochaetecide introduced into the spinal cavity does not reach all the contents of the cranial cavity? No! The maximum amount of salvarsan which can be injected intraspinally with impunity is about one milligram and this small quantity is surely not sufficient to act as a powerful spirochaetecide. There must be another factor playing an important, if not the main role in the action of intraspinal medication and I believe, it is the reaction of the tissues, mainly of the meninges to the medication, as evidenced by a marked leucytosis in the spinal fluid severe pains in the head back and extremities, fever herpetic eruptions etc. lasting in some patients seven to fourteen days. No doubt that this reaction is a general, mild meningitis, which in favorable cases extends as far up as the optic pathways. Here, as in other bacterial conditions the artificial hyperaemia is bound to have a beneficial resorptive effect upon the inflammatory changes and a destructive action upon the spirochetes lodged at the most accessible places. It seems to me that the improvement in patients with spinal medication is in direct proportion to the extent of meningitic reaction not to its intensity. If the reaction does not extend into the cranial cavity no beneficial effect can be expected from its use in luetic changes of the optic paths.

The experimental researches, showing the absence of penetration of the stain in the cranial cavity, when injected intraspinally, and the failures we get from the spinal medication of lues of the brain and optic nerves lead us to consider another than the intraspinal method, viz the intracranial administration of drugs. In 1893

Horsley and Gowers, after extensive pathological studies, concluded that gumma cerebri is not curable by mercury and iodides and that the only rational treatment is the excision of the gumma. Macewen, Horsley, Harrison, Parker and Bruns have extirpated in several occasions syphilitic tumors of the brain. A few years ago Horsley suggested subdural injections of bichloride of mercury solutions for lues cerebri. As we see surgeons have long ago concluded that syphilis of the cranial contents should be treated by opening the skull. Since 1914 the intracranial medication has been tried out (by Marie, Levaditi and Martel in France, Marinresco and Minea in Roumania, Ballance and Campbell in England, Wardner, Hamill, Sharpe and Hammond in this country) for the treatment of general paralysis. The results, are far from discouraging and future experience will surely bring about an improvement of technique and medication, with probably better results.

As far as the treatment of the lues of the optic pathways is concerned there reigns in the ophthalmological world a general pessimism and inertia based on tradition and disappointment. The tradition, as expressed in the classical text books, says that progressive primary optic atrophy is incurable and always ends in blindness, the neuritic optic atrophy responds very poorly to treatment and ends in partial or total blindness. The failure of our therapy in tabetic optic atrophy is explained in a traditional manner by the pathology of the process a primary degeneration of the retinal ganglia cells and optic fibres. The general belief is that since "we cannot stop degeneration we are powerless to treat this trouble". But pathology is not always right. Leri and Marie do not accept the primary degeneration theory. They describe "an interstitial neuritis a syphilitic cirrhosis of vascular origin and a syphilitic meningitis" as the primary process in tabetic optic atrophy. Stargardt has found that the process starts as an inflammation around the chiasm, optic tracts and intracranial portion of the optic nerves. The inflammation extends from the periphery into the nerve along the lymphatics of the blood vessels. Steiner has found foci of inflammation in peripheral nerves of tabetics and paretics who did not have any disturbances of motility or sensibility during life in the corresponding areas. These findings are in distinct disagreement with those of the older authors who believed that there can be only a primary degeneration (no inflammation) of the nerves in tabes and general paresis.

As we see the traditional conceptions of the pathology of the nerves in tabes and general paresis begin to be shaken by modern methods of research, and this helps us along to change our views regarding the hopeless outlook of these conditions. If we accept the view that we have

to deal with a peculiar type of an inflammatory process we can attempt to treat it

In a general way the intracranial treatment of the luetic process of the cranial contents is to be carried out along similar lines as the intraspinal treatment. Its object is to place the medication in the immediate vicinity of the diseased tissues. By this method we obtain the spirochaetecidal effect on the one hand and a reactive, mild meningitis on the other both, absolutely necessary for attaining improvement and cure. Looking upon the subject of treatment of luetic optic nerve affections not only from the point of view of pathology, not only from that of spirochaetecidal effect of the medication, but mostly from the point of view of tissue reaction and tissue vitality we may understand why our medication may succeed, fail or harm. While a reaction in proper amount is beneficial, one in insufficient amount has no effect and one too intense may be followed by a complete exhaustion of the already exhausted cells, or even their death. The ophthalmologists who are prejudiced against Hg and salvarsan in optic atrophies are only partly right, because drugs which are harmful in certain doses are apt to be beneficial in very small, 'stimulating' doses. The main thing is to know the drugs which have an elective affinity for nervous parenchyma. The rest is a matter of detail.

If we ask ourselves "what is the treatment for lues of the optic pathways?" we must answer the same as that of cerebrospinal lues and "metallues." Hard and fast rules cannot be put down in therapeutics, but a few principles to be followed may be stated about as follows:

(1) Begin the treatment as early as possible, that means make a diagnosis of the very beginning of lues nervosa. Syphilographers of great experience, like J. A. Fordyce and neurologists, like Nonne, put great stress upon the treatment of lues nervosa at its earliest appearance.

(2) Treat energetically. Charcot says "Frapper vite et fort" and Neisser "So fruh wie m"glich." We obtain the most improvement during the first course of treatment. The subsequent treatment prevents recurrences and aims at a 'cure.'

(3) Know when to discontinue the treatment and watch the patient after its cessation. When the patient is and remains free from clinical as well as from serological manifestations, treatment should be discontinued.

(4) Do not delay the intraspinal or intracranial treatment, as soon as indicated.

(5) Do not forget the patient and his vitality or general condition. Respect and stimulate the natural defensive properties of his tissues by prescribing the old time honored general hygienic

rules. Eradicate all the foci of infection (bad teeth, old gonorrhoea, nasal sinusitis, chronic tonsils, etc.) Individualize the treatment because no two individuals are alike as regards their response to treatment.

(6) Do not forget the general practitioner. Teach him to think neurologically when he has to treat a patient with syphilis. We know that there is a meningeal reaction concomitant with the cutaneous eruption and the cerebrospinal lues has many a time, if not always, its inception during the secondary stage of syphilis. Let the physician know when this takes place and begin immediate, appropriate treatment. This may obviate an involvement of the parenchyma of the nervous tissue in the future and may prevent the optic atrophies. No diagnosis of syphilis is complete unless the spinal fluid is examined.

Following is a summary of cases with luetic involvement of the optic nerves treated by the spinal and cranial method. (A complete report and the subsequent course will be published elsewhere.) All the patients who came to the Knapp Memorial Eye Hospital or to the Vanderbilt Clinic had had general anti-luetic treatment. Before, during and in spite of the treatment, the loss of vision continued unabated. The patients were first submitted to a course of spinal treatments which, in some succeeded to arrest the process, in others did not. Only that group of patients, which did not respond to the general and spinal method was submitted to cranial treatment.

A Cases of optic atrophies treated by the spinal route

Case 1 A. B. Cerebrospinal lues, bilateral optic atrophy. Vision before the spinal treatment gradually diminishing until it reached 20/40 in the right eye, 0 in the left eye. General and spinal treatment for three months. The process was arrested as shown by the findings in the spinal fluid and by the arrest of loss of vision 20/40 right, 0 left.

Case 2 H. L. Tabes, bilateral optic atrophy. Involvement of the optic chiasm (bitemporal hemianopsia). Vision before treatment right eye, 20/50 left eye, movement of hand.

During a two months' treatment of intravenous injections of salvarsan the vision diminished to 20/200 in the right eye. Spinal treatment added to Hg and salvarsan intravenously arrested the loss of vision. Patient kept his vision for past five months.

Case 3 B. B. Tabes, bilateral optic atrophy, vision went rapidly down to 20/200 right, 20/50 left, before she came under my observation. Spinal and general treatment for three months. At the end of this period we find the patient with

20/200 right, 20/40 + + left, and able to read a paper, which she was unable to do before the spinal treatment started

Case 4 R S Tabes, bilateral optic atrophy. Vision went gradually down to 5/200 right, 20/70 + left during a continuous treatment with strychnin and K I administered elsewhere. Patient began general and spinal treatment as soon as she came under observation. After three months of treatment we find her with only light perception in the right eye, 20/100 + in the left eye. This patient is not responding to spinal treatment and will eventually have to undergo the cranial treatment.

Case 5 T K Tabo paresis bilateral optic atrophy. Vision diminished rapidly before she came to the clinic. Right eye movement of hand, left eye 20/50. During eight weeks of spinal and general treatment the vision went down to zero in either eye. This patient developed later on parietic general convulsions. She might have fared better would she have had cranial treatment in time.

#### SUMMARY OF CASES WITH INTRACRANIAL TREATMENT

Case 1 A B Tabes, bilateral optic atrophy. Vision diminished rapidly before calling at the clinic, to zero in the right eye, 20/100 in the left eye. Patient received thirty-one spinal treatments, eleven venous, twenty-one muscular injections (Hg) during one and one half years, at the end of this period we find him with 0 in the right eye and 5/100 in the left eye. Patient is complaining that his vision is gradually diminishing. Cranial treatment begun in February, 1917. In May, 1917 loss of vision seems to have been arrested.

Case 2 L Z Cerebrospinal lues, bilateral optic atrophy. Sclerotic changes of retinal blood vessels. Vision before our treatment was begun 20/100 right, movement of hand, left. After a course of spinal injections and general treatment vision is found 15/100 right, 0 left. Intracranial treatment February, 1917. Process seems to have been arrested. In May, 1917 vision is found 20/100 + right, 0 left.

Case 3 P K Cerebrospinal lues, bilateral optic atrophy. Vision before treatment, right, movement of hand, left, light perception (?).

Vision after a course of spinal treatments same as before. Vision after a course of cranial treatments, right, counts fingers at two feet, left, movement of hand.

Case 4 E D Cerebrospinal lues, bilateral optic atrophy, paralysis of both VI cranial nerves. Vision before and after spinal and general treatment 20/20 right, 20/30 + left. No improvement of diplopia which measures for distance 18-20 prism degrees. Cranial treatment January, 1917. Vision 20/20 right, 20/20 + + left.

Diplopia overcome with four prism degrees. The treatment in this patient was given mainly to relieve if possible the diplopia, which prevented the patient to follow his occupation (cheuffeur).

Case 5 I A Tabes, bilateral optic atrophy. Vision right, fingers at three feet, left, 20/30 +. Very rapid diminution of vision before and during spinal and general treatment. Two weeks later we find vision right, hand movement, left, 3/200. Cranial treatment begun February, 1917. Vision improved rapidly to 10/100 in the left eye. The field of vision became decidedly better, so that the patient who had to be led around by the hand before the operation, was able to come alone to the clinic four weeks after the operation.

The reader should not overlook the very important fact that most of these cases came for the cranial treatment when the process was very far advanced. The fair test for the efficacy of any treatment is when administered in time.

I wish to express my thanks to Drs A. Knipp and H. Tyson for having referred to me patients with optic atrophy for treatment to Dr E. C. Jagle for her most competent work on the serology of the spinal fluid of my patients and to Dr I. Rosen of the Department of Syphilology of the Vanderbilt Clinic for the opportunity he gave me to perfect my technique of spinal puncture and spinal treatment. The intracranial treatment has been administered with the kind collaboration of Dr Drew Wardner of New York.

#### THE TREATMENT OF SYPHILIS OF THE BRAIN AND CORD BY SUBDURAL INJECTIONS OF SALVARSANIZED-MERCURIALIZED SERUM

By S. T. NICHOLSON, M.D.,  
CLIFTON SPRINGS, N. Y.

BY way of preface, it is well to say that there is nothing essentially new in this presentation though in view of the present status of the subject under discussion any contribution which may in the least degree help to bring to light the proper solution of the problem needs no apology. So much has been written on this subject that it seems wise to summarize the work of the active investigators in this field in addition to presenting the material treated in this clinic.

A retrospect of only a dozen years shows us how little was absolutely known about the etiology and treatment of these conditions or even the prevalence of syphilis, until the general use of Wassermann-Neisser-Bruck reaction and the luetin test of Noguchi, for it was in 1905 that Schaudinn and Hoffman

demonstrated the presence of the treponema pallida in syphilitic sores and in 1913 Noguchi<sup>1</sup> demonstrated the presence of the treponema in twelve out of seventy paretic brains and in a later paper<sup>2</sup> reported them in forty-eight out of two hundred paretic brains and in one out of twelve cords, although attention has been called to frequency of the history of syphilis in patients with paresis since 1857<sup>3</sup>

Now, that the etiology is established, the three means of combating the disease, are by prevention, by biological means and by chemical agents. The former is the plan that obviously offers the greater scope but to care for those already afflicted is the problem that demands the clinician's attention and this has led step by step to the great volume of work on intraspinal therapy which was begun in 1911 by Swift & Ellis,<sup>4</sup> Marinesco,<sup>5</sup> and Robertson,<sup>6</sup> by injecting subdurally the serum of patients previously treated with intravenous injections of salvarsan. From that time until the present variations in the nature of intraspinal injections have been made including the following

Neo salvarsan solutions, serum salvarsanized in vivo and in vitro, and the mercurial therapy comprising mercuric chloride lavage, mercuric cyanide dissolved in saline and mercurialized serum

The effect of the injections of these different substances in spinal therapy as well as a detailed comprehensive analysis of the results in the hands of numerous observers is presented by Swift<sup>7</sup> and from his analysis the methods which seem to deserve the greatest commendation were *first*, the one devised by Ogilvie<sup>8</sup> in which he administered serum salvarsanized, in vitro, with a slight alkaline reaction instead of the unknown dosage in the serum salvarsanized in vivo. *Second*, the method described by Byrnes<sup>9</sup> which appeared almost simultaneously with Ogilvie's publication in which he reported the use of mercurialized serum intraspinally by adding a known quantity of bichloride of mercury to blood serum, thereby forming an albuminate of mercury. It is this method with some very slight variations in a few cases and no variations in others, that I have used for the past two and one-half years. The alternating of the use of this method with that devised by Ogilvie has been in mind, it is obvious, however, that exactness in interpreting results is difficult at best in a disease of such chronicity and we thought it advisable to adhere closely to one method until thoroughly tried out and our results up to the present time are not discouraging. A long period of time, however, is necessary to permit definite conclusions and the old bug bear of syphilographers

is ever a source of trouble, that is, the failure of the patients to present themselves repeatedly for treatment and their inability to understand its importance when most of them improve rapidly under a few treatments

In September, 1916, number of the Clifton Medical Bulletin,<sup>10</sup> a preliminary report was made describing the effects of the treatment which we had followed in eight cases of tabes and two of paresis and the conclusions made at that time were as follows

The symptoms which have been relieved by treatment have been general malaise, pain, painful muscular spasm, decreased sphincter control of both bladder and bowel, ataxia has been very much relieved in several cases. Serologically, all cases have shown marked improvement and in two cases, the spinal fluid has become entirely negative even to cholestrinized antigen. Since this was published, many of the patients have returned for further treatment and new cases have been added. This increases the value of the series giving a better basis to accept or discard any feature of the method outlined

The treatment is carried out as follows

Lumbar puncture is made in the usual way. Injections under the dura in the temporo-frontal region and the lateral ventricles were not made in any cases. After allowing the medicated serum to flow by gravity into the subarachnoid space through the lumbar puncture route, the foot of the bed is elevated, and the pillows are removed from under the patient's head. The patient is kept in this position for three hours

Experiments by Blackfan and Dandy<sup>11</sup> show that there is a diffusion of dye stuff in solution through the subarachnoid space in both the cranium and the cord. Phenol-sulphone-phthalein injected in the ventricles appears intraspinally in a few minutes and *visa versa*. This fact in the consideration of the pathology of the luetic brain lesions which will be discussed later on together with the simplicity of the lumbar route over the others mentioned, renders it the method of choice

The spinal injection is prepared as follows

From one-half to three-quarters of an hour after an intravenous injection of salvarsan from 4 gm to 6 gm, depending on the individual case, 40-50 c.c. of blood is taken from the median basilic vein, allowed to clot at room temperature, the clot being separated from the wall of the tube just before being placed in the ice box over night. On the following morning, the blood is centrifugalized for one-half hour, 1/50 to 1/25gr of bichloride of mercury, i.e. (1 c.c. to 2 c.c. of a solution containing 1 gr of mercury in 50 c.c. of freshly distilled water sterilized in a volumetric flask), is put into a flask. The clear

centrifugized blood serum is added drop by drop and thoroughly agitated between drops. In the beginning, a cloudy precipitate forms which disappears on the addition of more serum. I feel that this slow and careful addition of the serum to the mercury is important, 12 cc of the serum is added and the total volume is brought up to 30 cc by the addition of freshly prepared normal salt solution. This mixture is then heated in a water bath at 56 degrees C for one-half hour. Lumbar puncture is made and from 30 to 35 cc of the spinal fluid is drawn off and the medicated serum cooled to body temperature is allowed to flow in by gravity. This method sounds hazardous for there are three features that enter into it, serum salvarsanized in vivo, serum which is undoubtedly mercurialized in vivo—for most of these patients are immediately started on some form of mercury either the salicylate or the grey oil by muscular injections or theunction of mercurial ointment—and finally the known quantity of bichloride of mercury added to the serum and salt mixture.

There have been none of the unpleasant sequelæ following this plan as was the cases in some of the reported cases following the injection of more than 1 mg of salvarsan in serum intraspinally. The complete technique has not been carried out in every case, individuality of course has been given due consideration. In some cases for example, mercurialized serum in vitro has alone been used. Our method of choice, however is the salvarsanized serum plus the mercurialized serum obtained from the patient who has been previously treated by these two drugs and to whose serum is then added for subdural injection the known dosage of bichloride of mercury.

I wish to emphasize the fact that in no instance has serum from foreign animals been used or even from different individuals. We have adhered closely to the autogenous product.

As this paper is confined to intraspinal treatment, the general treatment will be dismissed in a few words. Salvarsan intravenously each week, mercury by injections of grey oil or salicylate, or byunctions of mercurial ointment to the point of saturation iodides of potassium to the limit of tolerance and lastly the subarachnoid injections previously described, every two or three weeks.

In a general way, such a plan as the following is carried out:

In the beginning, the patient is given six to eight intravenous injections of salvarsan and three to four subdural injections. This together with the iodides and mercury. The patient is then discharged with the advice to

return in two or three months for observation and further treatment and is also advised to continue the iodides and mercury in the meantime. "Ordyc" in a recent publication says: "While it is possible theoretically to formulate a method of treatment in the various stages of syphilis, as a matter of practice, the best devised plan must pre eminently be an elastic one subject to the medications called for by the susceptibility of the patient to the drugs and to intercurrent reactions which take place from time to time."

At the present time, it is almost superfluous to say that salvarsan is one of the best therapeutic agents available in the treatment of syphilis and receives the place of the greatest importance in the therapy of luetic infections of the central nervous system or in the late manifestations of the diseases of the periosteum and in gummatous lesions, although one would naturally believe that its field of greatest usefulness would be in the early stages of the disease, owing to its spirocheticidal properties.

Ormsby<sup>12</sup> in a very recent paper gives an exhaustive account of the use of salvarsan and concludes that the efficiency of salvarsan and neosalvarsan is of such high order and the limitations so comparatively few that the question of their abandonment can be conceived only by the discovery of a more potent remedial agent.

Before dismissing the technical phase of the subject, there are certain features that deserve emphasis and they are the heating of the serum to 56 degrees C and the time of contact between the serum and the clot after the withdrawal of the blood from the patient.

This phase is discussed by Swift<sup>14</sup> in a recent monograph in which he states that the increase in activity of salvarsanized serum produced by heating to 56 degrees C is due in part to the removal of the inhibitory substance in the serum and in part to a direct increase in the spirocheticidal power in the heated serum. Heated serum of salvarsan treated patients is more spirocheticidal if it has been in contact with the clot over night than if it has been separated immediately after coagulation. This is not true with a serum from blood which has been salvarsanized in vitro.

The cases of syphilitic infection of the central nervous system treated by the method as outlined in this clinic are as follows:

CASE No 1—A man, aged 51, entered the sanitarium August 7, 1915. A diagnosis of tabes dorsalis was made. He had had a nervous breakdown several years ago. Bladder disturbance four years ago. Previous to his admission, he had a positive Wassermann of the blood serum. He had had received two

intravenous injections of salvarsan and one of neosalvarsan, also salicylate of mercury intramuscularly. He had had severe girdle pains with a sense of constriction about the lower chest and shooting pains in the lower extremities, loss of control of bladder, with a more or less constant dribble of urine. Physical examination showed Argyll-Robertson pupil, frequent muscle spasms involving particularly the left hypochondriac region. These spasms were accompanied with severe pain and recurred about once a minute. Some spasms in the legs. The abdominal and cremasteric reflexes were active. The right K.K. was present. The left was greatly reduced. He was given one dose of neosalvarsan, four doses of salvarsan intravenously and four doses of mercurialized-salvarsanized serum intraspinally in a period covering six months. The spinal fluid cell count was reduced from forty-one to six cells per cmm. The Wassermann reaction became negative in the blood serum and spinal fluid when 2 cc were used even to cholesterinized antigen. He began the treatment twenty-one months ago and during that time, he has had only slight jerks at odd times. He is now following his occupation, whereas, previously he was unable to do any work. He is free from pain.

CASE No 2—A woman aged 45, was admitted to the sanitarium January 21, 1915. A diagnosis of *tabes dorsalis* was made. She was married. Had had two miscarriages but had no knowledge of the existence of syphilis. She had a feeling of tightness across her chest and upper abdomen and of a weight in her abdomen. Had intermittent pains in both legs, marked impairment of control of the bowels and bladder for the past five years and marked ataxia. Physical examination showed an Argyll-Robertson pupil, the deep reflexes of the leg were absent. Romberg positive. The Wassermann reaction in her blood serum was positive, also in the spinal fluid when 2 of a cc was used. The spinal fluid had a cell count of twenty-two per cmm. She was given three doses of salvarsan, three doses of neosalvarsan intravenously and two doses of mercurialized serum intraspinally. The treatment relieved the pains and parasthesia, the bladder symptoms and greatly relieved the ataxia. The Wassermann reaction became negative in the blood serum, the spinal fluid showed a positive Wassermann reaction when 3 of a cc was used, but was negative when 2 of a cc was used. Spinal fluid had a cell count of nine per cmm. Eighteen months since the last treatment she has been free from symptoms.

I received a personal communication from her within the last two weeks stating that the improvement continues.

CASE No 3 —A man, aged 51, was admitted to the sanitarium November 28, 1915. A diagnosis of *tabes dorsalis* was made. He had had gonorrhoea and a chancre twenty years ago which had not been followed by secondary manifestations. This was diagnosed *chanroids* and the patient had received no treatment. Three months previous to his admission, he had been intensely nervous, weak, and unable to concentrate. When rising from a chair, he had to steady himself before he could start walking. He had dull aching pains in the lumbar region which radiated upward and downward. Physical examination showed Argyll-Robertson pupil, absent knee jerks, positive Romberg, impaired memory. The Wassermann reaction was positive in both the blood serum and spinal fluid, with a spinal fluid cell count of fifty-two per cmm. He was given nine doses of salvarsan intravenously and four doses of mercurialized salvarsanized serum intraspinally. This treatment relieved the nervousness and weakness. Patient has gained twenty-five pounds in weight. The ataxia is very much decreased. Ten months since the last treatment, patient remains improved. Is now working at his occupation which previous to his treatment he was unable to pursue. The Wassermann reaction became negative in the spinal fluid when 1 of a cc was used, slightly positive when 2 was used. Spinal fluid cell count became two per cmm.

CASE No 4—A man, aged 34, entered the sanitarium September 16, 1916. A diagnosis of *tabes dorsalis* was made. He had had what was diagnosed *chanroids* eleven years previously. No secondary lesions. Two years previous to admission, he had had a lumbar puncture which had a strongly positive Wassermann with a spinal fluid cell count of sixty-nine per cmm. At this time, he was given two doses of salvarsan intravenously and advised at the time to continue treatment, which he refused. During the two years previous to his admission, he had had unsteadiness in walking, which gradually became worse until his admission, at which time he was practically helpless. The sense of position was entirely lost. He had a loss of control of the bladder and anal reflexes and was unable to walk. He had an Argyll-Robertson pupil. The Wassermann reaction was strongly positive in both the blood serum and spinal fluid, together with a spinal fluid cell count of ninety-five per cmm. He was given four doses of salvarsan intravenously and four doses of mercurialized salvarsanized serum intraspinally. The spinal fluid cell count was reduced from ninety-five to ten per cmm. The Wassermann reaction was reduced from four plus to one plus. These treatments greatly benefited

the bladder and rectal reflexes and relieved the ataxia to the extent of rendering him able to walk down town," as he expressed it, with the use of a cane. He refused further treatments, however, and is gradually relapsing.

CASE No 5 A man, aged 54 occupation a physician, entered the sanitarium April 12, 1916. A diagnosis of *tubercles dorsalis* was made. Patient had been doing a hard, general practice. Had never had syphilis to his knowledge. In his practice both in surgical and obstetrical work he had never worn gloves. Four years ago, he began to have neuralgic pains in his legs with stiffness and numbness in the leg muscles. One year ago he noticed an unsteadiness in walking and had cramps in his legs at night. Six months previous to admission, he had been unable to walk in the dark without stumbling. Hearing in the left ear has been impaired for fifteen years. Physical examination shows that the pupils do not react to light but showed a reaction to accommodation, inequality in the size of the pupils, absent deep reflexes in his leg and a positive Romberg. The Wassermann reaction in the blood serum and in the spinal fluid was positive with a spinal fluid cell count of one hundred and thirty-six per cmm. He was given seven doses of salvarsan intravenously and four doses of mercurialized salvarsanized serum intraspinally. The treatments relieved the cramps, stiffness, and numbness in his legs and greatly benefited the ataxia. The spinal fluid cell count was reduced from one hundred and thirty-six to twelve per cmm. The Wassermann reaction was negative with 2 of 1 cc of the fluid positive with 3 of 1 cc. Only twelve months have elapsed since the patient began treatment but in this time he has resumed his medical practice, which he had formerly abandoned, and to use his own words, in a recent communication, "I feel so good that I don't think I will ever have to go through that lumbar excruciation of yours again."

CASE No 6 A man aged 58 entered the sanitarium May 1, 1916. A diagnosis of *tubercles dorsalis* was made. He gave no history of a luetic infection. He had had incontinence of urine for twelve years previous to his admission. He also had had a sudden onset of deafness and began to feel unsteady on his feet at the same time. Pronounced ataxia rapidly developed. Five years ago he lost his sexual power. Physical examination showed a positive Romberg, absent deep reflexes, staggering gait, wide base and the waddling symptom. Loss of sphincter control of the bladder. The Wassermann reaction was positive in the blood serum and in the spinal fluid. The spinal fluid cell count was thirty-six per cmm. He was given five doses of salvarsan intravenously and three doses of mercurialized salvarsanized serum intraspinally.

This amount of treatment improved the deafness, ataxia, and incontinence, and there was a marked improvement in his general physical condition. The above mentioned symptoms were not entirely relieved, as we would naturally expect, on account of their long standing. The patient wrote me that previous to taking the treatments, he was gradually getting worse, whereas since the treatments there has been no change for the worse in his condition. The Wassermann reaction decreased in intensity in the spinal fluid and in the blood serum. The cell count dropped from thirty-six to five per cmm. This is another case of neglected follow up.

CASE No 7—A woman aged 49, entered the sanitarium for treatment August 12, 1916. A diagnosis of *tubercles dorsalis* was made. No history of syphilis was obtained although she and her husband died of 'locomotor' fourteen years previously. She had had ataxia, shooting pains in her legs and numbness in the lower extremities for two years. She had been treated for rheumatism and had received no anti-luetic treatment. Physical examination showed a positive Romberg, absent deep reflexes in her legs and Argyll-Robertson pupil. The Wassermann reaction in her blood serum and spinal fluid was positive with a cell count of forty-seven per cmm. She was given six doses of salvarsan intravenously and one dose of mercurialized salvarsanized serum intraspinally. This amount of treatment decreased her symptoms to the extent of her refusing to accept more treatments at the present time on the plea of present improvement.

CASE No 8—A man aged 56 entered the sanitarium May 26, 1916. A diagnosis of *parietis* was made. The patient had been a physician doing general practice and no definite history of syphilis could be obtained from him. Six years previous to admission, he had had an untidy sore around the middle finger nail of his right hand. He had received no anti-syphilitic treatment. For two years he had been restless, unattentive and mentally incapable of performing his duties and had almost complete loss of his memory. He had been absolutely negative during this time. Physical examination showed exaggerated reflexes, delayed cerebration, inability to grasp or respond to questions, presented mild ideas of grandeur and a tendency to violence when excited. The Wassermann reaction was positive in the blood serum and the spinal fluid. The spinal fluid showed a cell count of sixteen per cmm. He was given three doses of salvarsan intravenously and three doses of mercurialized serum intraspinally. These treatments may have precipitated the parietic symptoms, at all events the patient became so unruly that he was

removed to an institution for the care of the insane

CASE No 9—A man, aged 47, entered the sanitarium January 21, 1916. A diagnosis of paresis was made. He had had gonorrhoea twenty-eight years previous. No history of chancie. He had received no anti-luetic treatment. For a year previous, he had been irritable, restless, his disposition had changed, he had tired very easily, and had within the last six months become markedly depressed. He had noticed a tremor of the hands, difficulty in writing and in speaking and a loss of memory. Physical examination showed exaggerated reflexes, high blood pressure with hardened arteries and veins, tremor of the hands and hip muscles, slurring speech, delayed cerebation, depression, poor memory, and a characteristic hand writing. The Wassermann reaction was positive in both the blood serum and the spinal fluid with a spinal fluid cell count of nineteen per cmm. He was given five doses of salvarsan intravenously and three doses of mercurialized salvarsanized serum intraspinally. For three months, the patient rapidly improved and he was entirely relieved of the above mentioned symptoms. He insisted on going home and had been there for ten days when he suddenly decided to return to the sanitarium. He became violently insane on the train and had to be forcibly restrained. He was taken to an institution for the care of mental diseases and his condition has rapidly grown worse.

CASE No 10—A man, aged 56, entered the sanitarium, July 14, 1916. A diagnosis of cerebrospinal syphilis was made. He denied venereal infection. During the six months previous to entrance, he had had hesitancy in walking with some mental confusion, diplopia for a few days, difficulty in speech, failing memory, dizziness, and headaches. Physical examination showed the pupils reacted to light sluggishly, inequality of the pupils, thick and hesitating speech, exaggerated reflexes, ataxia of both arms, irritability, and bad memory. The Wassermann reaction was positive in both blood serum and spinal fluid, with spinal fluid cell count of eighteen per cmm. He was given six doses of salvarsan intravenously and three doses of mercurialized salvarsanized serum intraspinally. Treatment improved his speech, ataxia and disposition. The intensity of the Wassermann reaction was reduced in both the blood serum and in the spinal fluid. The spinal fluid cell count was reduced to seven per cmm. He has resumed his occupation and I am expecting his early return for further treatment.

CASE No 11—A man, aged 38, entered the sanitarium November 16, 1916. A diagnosis of cerebrospinal syphilis was made. He denied

venereal infection. During the two years previous to entrance, he had had depression, dizziness, impaired hand writing, letters poorly expressed, severe frontal headaches, thick speech, ataxia of the facial muscles. Physical examination showed unequal pupils which did not react to light, exaggerated reflexes, tremor of the tongue and facial muscles, slow speech, and slow ideation. The Wassermann reaction was positive in both the blood serum and spinal fluid with a spinal fluid cell count of two per cmm. He was given four doses of salvarsan intravenously and two doses of mercurialized salvarsanized serum intraspinally. Despite apparent benefit the patient became dissatisfied with the slow progress of his recovery and went home. I have recently heard of his death, no account of which has thus far been received.

CASE No 12—A man, aged 46, entered the sanitarium January 17, 1917. A diagnosis of cerebrospinal syphilis was made. He had had gonorrhoea twenty years before but gave no history of syphilis. During the past year, he has had stiffness and weakness in his legs, ataxia, staggering gait, no confidence in his feet, dizziness, severe headaches. Physical examination showed spasticity of leg muscles, exaggerated deep reflexes, ankle clonus, positive Babinski, ataxic gait, normal pupils. The Wassermann was positive in both the blood serum and the spinal fluid with a spinal fluid cell count of five per cmm. He was given seven doses of salvarsan and three doses of mercurialized salvarsanized serum intraspinally. His symptoms are showing some improvement and his treatment will be continued further.

CASE No 13—A woman, aged 52, entered the sanitarium August 24, 1916. A diagnosis of syphilis with early tabes was made. Patient was a widow who had remarried four years ago and contracted the disease from her husband. For the past year, she had had mercurial and iodide treatments. She had severe headaches during the past year, pains in the abdomen radiating down both legs, "crying spells," sleeplessness and glycosuria. Physical examination showed absent deep reflexes, positive Romberg glycosuria. The Wassermann reaction was positive in the blood serum and spinal fluid. Spinal fluid had a cell count of 17 per cmm. She was given seven doses of salvarsan intravenously and two doses of mercurialized salvarsanized serum intraspinally. This amount of treatment relieved the somatic pains, and the glycosuria. Patient was so ill in the beginning that a diabetic diet was impossible to follow. Patient is still under treatment but so far the Wassermann test has decreased markedly in strength in both the blood serum and the spinal fluid. The cell count at present is two per cmm. Patient is still under treatment.

CASE No. 14—A man, aged 32, entered the sanitarium November 19, 1916. A diagnosis of seventh and eighth nerve paralysis of luetic origin was made. He had had a primary sore three months previous to admission. He had had two doses of salvarsan. Six weeks previous to his entrance to the sanitarium, began to have roaring in his ear and deafness, headaches, and dizziness. Two weeks after this, began to have twitching of the left side of his face which rapidly developed into a facial paralysis. Physical examination showed paralysis of the left side of the face, exaggerated knee kicks, glandular enlargement. Wassermann reaction in his blood serum and spinal fluid was strongly positive. His spinal fluid cell count was five hundred and seventy one per cmm. He was given seven doses of salvarsan intravenously and four doses of mercurialized salvarsanized serum intraspinally. The Wassermann reaction has been reduced from four plus to one plus in the blood serum, slightly positive in 2 of a c.c. of spinal fluid with a spinal fluid cell count of eleven per cmm. Although the patient is still under treatment, all of his symptoms have been relieved except the facial paralysis and that shows marked progressive improvement.

In order to obtain as clear a view of the results of our work as possible cases who stopped treatment very early or who have recently come under observation, are not reported here. It should, however, be emphasized that no development thus far in any of the cases throws doubt on the conclusions drawn from the cases which are reported.

A summary of the reported cases shows that of those of tabes dorsalis which were nine in number, all showed marked improvement. The two cases of paresis who received the treatment did not do well but to offset this the two cases diagnosed as cerebrospinal syphilis showed improvement and a third case discontinued treatment too early to permit conclusive observations. I have also under treatment a case of paresis which I did not report in the group cases owing to the short time that he has received the treatment, but up to the present, there is undoubtedly marked improvement in the paretic symptoms.

One of the most striking features in reviewing these cases is the difficulty of getting the patients to return for observation and treatment until the beneficial result as evidenced by the laboratory findings is as satisfactory as the functional improvement, for almost immediately there is an improvement in the function in those cases that will show improvement. In one or two instances I have had some patients return only when they were beginning to have a relapse of the symptoms. This of course, means that they will have to begin all over again and this point cannot be emphasized too strongly for sometimes the symptoms return in greater intensity than at the

onset and in different parts of the body as Genenrich<sup>16</sup> pointed out. The reactions from these treatments should not frighten the patient for they are not intense. By keeping the patient in bed for a few days, occasionally giving small doses of morphin immediately after the treatment, the reaction is for the most part relatively slight. Furthermore, the use of novocain to infiltrate the skin over the site of the lumbar puncture renders it not to be particularly dreaded.

Although few in number, this group of cases is fairly representative of the differences in the lesion of lues of the central nervous system and this consideration should not be ignored. Since the demonstration of the treponema pallida in paretic brains, a pathological classification of the nervous types of the disease has been made.

*First*—The interstitial type, also classified under cerebrospinal syphilis in which there is gummatous formation, meningitis-luetica, and meningo-arteritis.

*Second*—The parenchymatous type previously known as para-syphilis in which there is a destruction as well as irritation of the nervous elements and a possible third type in which the lesions are vascular and the nervous disturbances are due to change in the circulatory system. In the interstitial type in which there is gummatous formation the most rapid results as regards functional recovery, are obtained although the tabetic cases responded well to treatment and they are classified under the parenchymatous group.

As Swift suggests in a paper already referred to "tabes often responds readily to treatment both as to arrest of the degeneration and a marked diminution or disappearance of pathologic elements in the cerebrospinal fluid while it is most difficult to obtain a favorable response in the fluid of paretics in spite of energetic treatment. This may be due to differences in excessibility of the essential lesion, and he concludes that it is illogical to condemn the treatment in all parenchymatous syphilis because paresis has not responded to treatment."

As regards the discouraging remarks in reference to paresis there is a difference of opinion in the value of the intraspinal treatments, depending on the stage of the disease, thus Cotton<sup>18</sup> reports 58 per cent arrested or improved with combined intravenous and intraspinal therapy and Ogilvie<sup>17</sup> reports 74 per cent improvement and in four cases, the blood and spinal fluids were brought to normal.

It is well to add that it is no easy matter to fairly present the various phases of a large subject in describing a certain form of therapy. The personal equation in each case must be considered as well as the accessory means of aiding in the treatment of the condition such as gen

cral hygiene including the proper diet, psychotherapy, Fraenkel's Re-education and lastly but vastly important one must remember that other diseases and pathological processes may occur concomitantly with the manifestations of syphilis.

Before dismissing the discussion of the cases, I wish to emphasize one point more, and that is, the possibility of involvement of the eighth nerve in syphilis of the central nervous system and to call your especial attention to case Number 14 in which the seventh nerve was chiefly involved. In five of these cases, there was involvement of the eighth nerve and I believe more careful analysis of each individual case will demonstrate involvement of this nerve in a large percentage of cases. Swift and Ellis<sup>18</sup> showed that in an analysis of thirty cases of tabes, forty per cent showed a marked diminution of hearing in one or both ears with a diminution or complete loss of bone conduction for watch tick.

It is essentially important to draw attention to certain fundamental facts underlying the end results the first of which is to get a clear idea of how and when infection takes place in the central nervous system and often by this means, it may be aborted. Lumbar puncture should be made at intervals in all cases of known syphilis regardless of symptoms and in such cases as complain of tired feelings, malaise and change in disposition and memory. It is obvious that knowing the prevalence of the disease a routine Wasserman of the blood serum should be made just as urine is routinely examined. The prevention of the disease theoretically and from an idealistic standpoint, of course is far from being solved, however, the prevention of the involvement of the central nervous system may be possible in the light of our present day knowledge, for we now know that the spirochaetae circulate in the blood of almost every patient in the late primary and early secondary stages and the central nervous system is frequently involved during these stages and this is the time that an effort should be made to prevent the localization of foci to develop in later years into the interstitial or parenchymatous degenerations of the central nervous system. Fordyce<sup>19</sup> calls attention to this in a recent article. The weight of evidence in favor of intraspinal therapy in luetic involvement of the central nervous system in favorable cases, makes the defense for its use redundant. The operation of preparing the treatment and injecting it is difficult and painstaking and requires great care and patience. It consists of much more than simply adding a drug to the serum. Ogilvie<sup>20</sup> states—and I can do no better than quote his own words—"Each step in the technique has definite, scientific reasons back of it and it should not be entrusted to anyone unable or incompetent to give the painstaking attention necessary." It is important also to judge the interval between injections because all

intraspinal injections are irritating and sufficient time should be allowed between injections to offset as much as possible this unpleasant feature.

McIntosh and Fields<sup>21</sup> have shown that certain dye substances can pass directly from the blood to the brain substance proper without being found in the cerebrospinal fluid, while others fail to penetrate the brain substance. The chief feature which governs the passage of the dyes is their solubility reaction which is a peculiar and not a general lipoid solubility. It corresponds to solubility in chloroform and water. Based on this, they say that the present day arsenical remedies are to some extent inefficient in the treatment of syphilis of the central nervous system because they do not possess the necessary solubility to allow them to pass from the blood vessels into the brain substance.

The methods of choice of intraspinal therapy.

- 1 The salvarsanized serum of Swift & Ellis
- 2 The Ogilvie method
- 3 The Byrnes method which has been the basis of my report today

One and three, I have used combined and our results have been so encouraging that we shall continue the method here described. However, as it has been shown that salvarsan is not found in the blood an hour after injection, we bleed the patients earlier and in addition have what Byrnes claimed at the time of his original publication, the beneficial effects of a mercurialized serum due to the patient's having previously been treated by general mercurial therapy. Every worker in this field should however, be equipped to follow any form of the treatment. Finally, the method of choice in our hands is the mercurialized salvarsanized serum intraspinally primarily because the treatment is elastic and may be easily adjusted to the individual problem presented by each case. For example, if a patient has any intravenous salvarsan reaction, the intraspinal treatment may be delayed several days or one has the option of using a mercurialized instead of a salvarsanized-mercurialized serum.

The mercurialized serum is a stable product and may be used at any time after its preparation.

After two years' experience with this method, the results of which I have reported, I feel that some other therapeutic agent must be discovered which will possess many added advantages before this method should be discarded.

Pain, muscular spasm, nervousness, headaches, ataxia, reduced or lost sphincter control have all been relieved in full or in part, but by far, the most important result is the possibility of restoration of some of the patients to their active pursuits of life.

## REFERENCES

- 1 H. Noguchi and J. W. Moore *Jour of Exper Med* Vol XVII, November, 1913
- 2 H. Noguchi *Jour of Cutaneous Dis* 1913, August, 1913
- 3 F. Esmarck and W. Jessen *Allg Ztschr f Psy chiat* 1857, XIV, page 20
- 4 H. F. Swift and A. W. M. Ellis *New York Med Jour* 1912, XCVI, page 53
- 5 G. Marnesio *Presse Med* 1911, XIV, page 65
- 6 G. N. Robertson *Edinburgh Med Jour* 1913, IX, page 28
- 7 H. F. Swift *The Jour of the Amer Med Assoc* July 17, 1915, Vol LXI, pages 209-214
- 8 H. S. Ogilvie *Jour of the A M A* November 28, 1914, page 193
- 9 C. M. Byrnes *The Jour of the A M A*, December 19, 1914, page 2182
- 10 S. T. Nicholson Jr *Clifton Medical Bulletin* 1916, page 2120
- 11 W. E. Drury and K. D. Blackfan *Internal Hydrocephalus Am Jour Dis of Child* December 1914, page 406
- 12 John A. Fordyce *The Am Jour of Med Sci* October 1916, No IV, page 469
- 13 Oliver S. Ormsby *Jour of Am Med Assoc* March 31, 1917, page 949
- 14 Homer F. Swift *A Study of Serum Salvarsanized in Vitro Jour of Exp Med* October 1, 1916, Vol XLIV, page 373
- 15 W. Gennerich *Munchen Med Wchschr* 1913, Vol LX, page 2591
- 16 H. S. Ogilvie *Jour of Nervous and Mental Dis* cases 1916, LVIII, page 263
- 17 Cotton *Am Jour of Insanity* 1915, Vol LXII, page 125
- 18 Arthur W. Ellis and H. F. Swift *Involvement of the Eighth Nerve in Syphilis of the Central Nervous System Jour of the Am Med Assoc*, May 1, 1915, LXIV, page 1471
- 19 J. A. Fordyce *The Diagnosis and General Treatment of Syphilis, Am Jour of the Med Sciences*, October 1916, No 4, page 469
- 20 H. S. Ogilvie *Med Record* June 26, 1915
- 21 J. McIntosh and Paul Fields *Brain*, Vol XXXIX, Parts 3 and 4, page 478

## Discussion

DR. MALCOLM S. WOODBURY, Clifton Springs: I think that some of the most important points brought out in the paper were these. The series of cases was not particularly large, but the results have been on the whole satisfactory. Dr. Nicholson personally attended to the detailed preparation of the material used, and it is particularly to be emphasized that these patients did not show severe reactions. I have known of instances showing quite severe reactions after the subdural use of medicaments, and the point may well be raised whether the technique in such cases was followed with sufficient care. For example, one of the minor technical points is this: In combining the solution of bichloride of mercury with the serum, the former should be added drop by drop and the serum well shaken when each drop is added, to avoid the accumulation of undissolved albuminate of mercury.

I have had the opportunity of seeing most of these cases, and of examining some of them before, during and after treatment and it is cer-

tainly true that in these instances at least, the plan of treatment has proved safe. One has no license to disregard the results obtained by careful workers in this field. Dr. Nicholson has shown the benefit to be expected from the method. The puritic cases, however, do not do well. In cerebrospinal syphilis and especially in syphilitic meningitis the results are very encouraging. Early diagnosis is an important matter. In tabs from a clinical point of view, one must give due consideration to losses of the types of sensation conveyed in the posterior columns of the cord, the sense of vibration, of passive motion position, spatial discrimination, roughness, etc. I have seen two early cases in whom only a loss of the sense of vibration in the legs was made out and who were proved to be typical tabetics on serological examination. Primary optic atrophy may be an early feature in tabs. I remember of seeing several such cases in the National Hospital in some of whom this was the first lesion noted. The three points to be emphasized are: early diagnosis, careful differentiation of types, exacting technical methods personally applied, or at least most carefully supervised.

DR. HENRY LALF WINTER, Cornwall: I was much interested in Dr. Nicholson's paper because I have had considerable experience in the treatment of cerebrospinal syphilis and other forms of syphilis of the nervous system with salvarsanized serum, but I have had none with the mercurosalized serum. In using the salvarsanized serum my experience has been as his. I have had good results in the active syphilitic cases. The early cases of tabs with definite symptoms but before advanced lesions had occurred also responded satisfactorily. I think that in possibly thirty cases treated in this way 75 per cent have shown a satisfactorily permanent arrest of progress. In early paresis I have had no success. The disease has apparently progressed regardless of treatment. I did not hear all of the paper and I should like to know what percentage of improvement Dr. Nicholson has obtained in paretics by combining mercury with the salvarsanized serum. This subject of subdural medication is an important one. It is my experience and belief that if patients are not doing well under the ordinary treatment it will be doing them an injustice if we do not resort to subdural injections of serum. It is a good rule that no patient should be allowed to go without intraspinal treatment but at the same time we must not deceive ourselves as to the possible futility of the treatment and must not forget that an occasional patient will grow rapidly worse after treatment. I noticed the latter tendency especially in the treatment of one case of paresis. This man, a physician, came under my care not long ago. He had had neurasthenic symptoms during the preceding year. When I first saw him he presented suspicious

glandular enlargements and his blood and spinal fluid Wassermanns were 4+. Subdural salvarsan was given and in a short time his delusions, which in the meanwhile had appeared, cleared up, but a dementia immediately appeared. His mental processes have progressively deteriorated since that time, and the deterioration was apparently accelerated by a subsequent dose of salvarsanized serum. I have seen this occur to a much lesser degree in other cases, the dementia following rather more promptly after intraspinal treatment than in cases not treated. This has not been the rule in cases which I have seen, but it has occurred often enough to make one hesitate. This may be a question of dosage or the selection of proper cases for treatment. I have not satisfied myself as to which is the more important. While waiting to decide this finally I think we can say, in general, that the larger the dose the safer for the patient, and that the more rapid the progress of the disease the greater the likelihood of the prompt appearance of dementia following subdural treatment.

DR S T NICHOLSON, Clifton Springs. In answer to Dr Winter's query I would say that the histories of the cases I have described were more or less illustrative of all such cases with the exception of one which is now under treatment. This was a man, forty-nine years of age, whom I saw in January, 1916. He gave no history of ever having had syphilis. He was markedly depressed and had tremor of the hands. The physical examination showed a high blood pressure, tremor of the hands, etc. This man improved for five or six months and we looked for a very gradual recovery. But when we least expected it, the symptoms were precipitated.

## GALL BLADDER DISEASE

By RUSSELL S FOWLER, M.D., F.A.C.S.,

BROOKLYN, N. Y.

**I**N gall bladder disease infection plays the leading rôle, gall stones themselves not always being present and when present being but one of the ways in which the infection finds expression. The infection reaches the gall bladder through the blood stream. Rose now's experiments with animals would seem to show that certain germs have a selective affinity for certain tissues. In laboratory work done under my direction in the German Hospital of Brooklyn in an endeavor to confirm this we have not been able as yet to reproduce gall bladder disease. We are also endeavoring to work out what relation, if any, exists between the formation of gall stones and the amount of cholesterol in the blood, but we have not as yet been able to verify the conclusions of

Henes who holds that hypercholesteremia is a fundamental factor in the formation of gall stones. If Henes' investigations can be substantiated the presence of hypercholesteremia may prove of positive diagnostic value in gall bladder affections.

For the purpose of this paper 289 personally operated cases were selected, this number being chosen in order to check up my findings with those of Kehr.

Jaundice was long looked upon not only by the laity but also by the profession as the cardinal symptom in gall bladder disease. Its occurrence may be accounted for in several ways, by extension of infection through the lymphatics and the enlargement of the lymphatics at the base of the liver with consequent pressure on the common and hepatic ducts. This may be true in a few instances but the majority are more logically explained by the extension of infection through the lymphatics to the pancreas producing pressure on the terminal portion of the common duct. Jaundice occurs in stone of the common duct if inflammation is present or if the obstruction is complete. Complete obstruction is rare without accompanying inflammation and without inflammation the stone will usually not give symptoms. Anatomically complete mechanical blockage occurs only in the third portion of the common duct, intermittent jaundice may be caused by temporary blockage of the second portion. Of stones in the common duct, 20 to 25 per cent do not present jaundice. Too often the casual surgeon is satisfied with emptying the gall bladder or perhaps even removing it, but does not explore the common duct unless clinical symptoms indicate trouble there. Such an operation is necessarily incomplete and will be followed by so-called recurrences. Kehr found jaundice in 51 per cent of 289 cases, my own cases showed jaundice in approximately 25 per cent. In about one-half of the cases stones were found in the common duct, in the majority of the remainder there were stones in the gall bladder alone. In others the jaundice was due to old ulceration resulting in adhesions, or to chronic pancreatitis or carcinoma involving the ducts or to cirrhosis of the liver. In acute blockage of the common duct jaundice shows a tendency to disappear quickly, while in chronic obstruction the jaundice is variable according to whether the passage through the papilla is free or not, each succeeding attack of jaundice disappears more slowly. Rarely in common duct stone obstruction jaundice will become chronic. Such cases are often mistaken for carcinoma involving the ducts in which latter the jaundice is usually deep and seldom changes. The former belief that jaun-

dice is a prominent symptom of gall bladder disease is erroneous. Waiting for it to appear as an indication for operation is no more rational than to wait for perforation in appendicitis. The absence of gall stones has no significance as contraindication for operative interference. There is no more reason in waiting for gall stones to form than there is in waiting for adhesions to develop in appendicitis. The appearance of stones in the stool is without value. The size of stones which may pass the papilla is that of the end of the index finger, an opening of this extent in the papilla I have occasionally found in chronic enlargement of the common duct. Larger stones must pass by ulceration. Jaundice is rarely noted as the first symptom but does so occur occasionally.

Pain is the most constant symptom and to the patient the most important. There may be a typical cramp in the epigastrium or region of the gall bladder referred to the back or shoulder or the pain may be present in the back alone or to the left of the epigastrium so that stomach ulcer is suggested. The pain may form a girdle about the waist. This latter I have found in about 2 per cent of cases. In some pain is entirely absent and the diagnosis must be based on other symptoms. In many patients but one painful area will be found posteriorly extending the breadth of both lower dorsal vertebrae from 2 cm. to the right of the vertebral column to the posterior axillary line (Boas). This area was found in about 10 per cent of the cases examined. In some patients it was the only evidence of gall bladder disease. Epigastric pain varies from a mild cramp to the most agonizing pain. The milder pains may be eased by indigestion and are perhaps so mild as to be treated by the patient with household remedies. The majority of cases start slowly with cramps in the epigastrium, loss of appetite, belching and feeling of fullness, vomiting, and feeling of heaviness in the stomach and dull pain. There is usually a previous history of indigestion which on close questioning resolves itself into a gall bladder attack. The first acute attack may occur in perfect health without ascertainable cause and it may be attributed by the patient to a hearty meal, to hard work or to worry and excitement, sometimes to pregnancy. In pregnancy hypercholesteremia is present but this is also present in nephritis, diabetes associated with acidosis and in the early stages of arteriosclerosis and malignant tumors. The bile of pregnant women contains a greater proportion of cholesterol than the bile of other persons. Clinically four out of five cases of gall stones occur in women and in many women the victims of gall bladder disease the history is ob-

tainable that the lesion was first noted during pregnancy. This clinical deduction has been handed down from time immemorial but it is my belief that closer study will show that the relation between pregnancy and gall bladder disease is not a causative one but that the condition of the blood and bile in pregnancy serves to accentuate in already existing condition, or what is as likely, that the relation is only coincidental. In my own experience a number of carefully taken histories have failed to show any relation between the earlier stages of gall bladder disease and pregnancy.

An acute attack of characteristic colic is not essential to diagnosis. In about 25 per cent of cases personally observed there was never a severe colic but more or less continuous discomfort and stomach symptoms. In some cases stones were found in the gall bladder only, in others stones were found in the common duct, and in still others no stone but adhesions or carcinoma of the gall bladder, pancreas or liver was present. In the cases in which the symptoms were pronounced adhesions to the pylorus or duodenum could be demonstrated at operation. In such cases also, since in the last ten years it has been our custom to remove the appendix through the gall bladder incision the appendix showed microscopically a chronic thickening and in many instances adhesions. Some cases presented jaundice, fever and empyema of the gall bladder without pain, others cholangitis and intense inflammation without pain. In brief, only about 25 per cent of the cases studied had typical attacks, the remaining 75 per cent presenting a diversity of symptoms. It must be borne in mind, however, that the length of time between the attacks especially if the pain is not severe may be so long as to allow the attack to escape the patient's recollection. In the beginning of the disease the attacks are infrequent, as the disease progresses the attacks come at shorter intervals. Any pain in the epigastrium or upper right quadrant or in the back, shoulder or chest should be investigated as to its possible relation to the gall bladder. Given a patient who complains of stomach symptoms—pressure, fullness, loss of appetite, occasional nausea or vomiting—gall bladder disease should be thought of. These are the first symptoms and become more pronounced as time goes on. Twenty-five per cent of these cases will show at some time a characteristic attack, most of the patients will show a typical pain yet sufficiently clear to be recognized, especially if taken in connection with the fact that the pains do not fall into the category of other lesions.

Cramping pain in the epigastrium, more to the right side and going through to the back is characteristic. Such a characteristic attack may occur but once.

*Relation of Food to Gall Bladder Pain*—The ingestion of food gives no pain except in ulcer of the stomach. The stomach distress is not due to the quantity or quality of the food and may even occur with the stomach empty. Stomach symptoms are due to adhesions and to interference with the flow of bile during digestion. It does not make a bit of difference what gall bladder cases eat, providing the food be easily digestible except when the pylorus is organically interfered with, they will have pain anyway, irrespective of diet. Cases come to the surgeon who have been dieted in all sorts of ways without avail. Naturally, however, after adhesions have formed about the pylorus and the lumen is narrowed or its function interfered with certain food will be better cared for by the disabled stomach, —disabled because the gall bladder disease was not recognized and relieved by surgery before it had produced its permanent effect upon the stomach. It must also be remembered that duodenal as well as stomach ulcer is met with in connection with gall bladder disease.

*Cause of Gall Bladder Pain*—Up to the present time the cause has been considered mechanical. Similar pains may be produced by stretching the cystic duct through inserting a probe or by distending the gall bladder by injection of fluid through a fistula. Typical pains have been noted at times in cases of closure of the common duct by tumor in which no stone was present, the explanation being the expulsive contractile efforts on the part of the gall bladder. It may be in some cases the cause of pain is mechanical alone, in the great majority, however, pain does not occur unless inflammation is present. Correct interpretation of the cause of gall bladder pain makes considerable difference in the treatment for if the pain were from mechanical causes only those operators who simply remove the stones and drain the gall bladder would be quite right. But if, as is shown microscopically through sections of the gall bladder wall, that inflammatory changes persist and are ready to light up again at any moment then cholecystostomy is not an operation to be considered in most instances and cholecystectomy is the operation of choice.

*Fever* in gall bladder disease is not characteristic of any special pathological change in the gall bladder; it more commonly indicates cholangitis. It is a distinct indication for operation but should never be waited for. Most attacks are practically without fever; when present the fever is not apt to be high. This is explained by the lymphatic system of the gall bladder the channels of which are small and rapidly blocked by inflammatory products with consequent early localization of the infection. In chronic common duct obstruction the fever may be intermittent, a chill preceding

the fever. When cholangitis ensues both chill and fever are pronounced and are accompanied by jaundice, the duration depending upon the obstruction to drainage through the common duct. Calculous empyema of the gall bladder is more apt to be accompanied by fever than non-calculous by reason of the more complete blockage of the cystic duct in stone cases,—the tension in the gall bladder being thereby increased and drainage through the ducts impossible. Empyema complicated by stone in the common duct presents fever. In cases limited to the gall bladder it is quite remarkable to find at operation an acutely inflamed gall bladder and to review the history and find but slight general and local symptoms. Tumor involvement of the bile passages at any point is usually unaccompanied by fever. Fever is absent in chronic cholecystitis except when acute inflammation supervenes.

*Vomiting* frequently accompanies the acute attack. In some cases there is a greatly increased flow of saliva from time to time and with this meteorism and a feeling of fullness in the stomach. Bile alone may be vomited showing free passage of bile into the duodenum or mucous may be vomited, rarely a stone. Vomiting may be entirely absent. Frequently there is complaint of a bitter taste in the mouth, of belching and of sour stomach. The character of the food has no relation to the vomiting unless adhesions are present, gastroparesis or dilatation of the stomach, i. e. conditions in which there is a retardation of food, in such cases vomiting may occur without pain. Such retardation in middle life or beyond points to a new growth in the pyloric region. Blood may appear in the vomitus and may also be found in the stools although no ulcer be present. In long standing jaundice blood may be present in the vomitus as the result of the cholemia. Blood may result from ulceration through fistula formation or from an aneurysm of the hepatic or cystic artery. Ulceration of the stomach with vomito nigra may result from sepsis originating in the gall bladder.

*Constipation* is in the majority of cases persistent and is accounted for by adhesions between the liver, gall bladder and colon interfering with the motility of the large intestine producing atony, or to adhesions to the duodenum interfering with the free flow of bile. Cathartics cause pain through increased peristalsis pulling upon the adhesions. Diarrhea is rarely seen and then in cases complicated by carcinoma with jaundice or in cholangitis. Meteorism is frequent. All disturbances of the stomach and intestines are due to the formation of adhesions and atony. As a result the patient's health suffers severely. Cholecystectomy with separation of adhesions greatly improves and in many cases cures these conditions.

**Nervous Symptoms**—It is natural that repeated and continuous attacks and the fear of other attacks react upon nervous patients. Prolonged crises develop more or less pronounced neurasthenia, hypochondriasis and hysterical symptoms. They are apt to be treated for the nervous complication, the underlying gall bladder condition being overlooked. Such patients are quite irritable, become easily depressed, have diminished physical and mental ability, are restless and have attacks of migrain.

**Cardiac complications** may result from infection having its origin in the gall bladder. Palpitation and irregularity and slow pulse are seen. A cardiac murmur may develop during the acute attack and disappear when the attack subsides. Endocarditis and myocarditis seem at times to be in direct relation with gall bladder disease. After operation the cardiac symptoms may disappear. This I have noted in a half dozen instances.

**Changes in metabolism resulting in loss of weight** occur especially if the attacks are frequent and adhesions are present in which case the stomach disturbances are more severe. The loss of weight occasioned by a single attack is quickly recovered from. Cases with long continued jaundice present a cachexia similar to that of cancer and are at times mistaken for cancer. In long standing jaundice the loss of weight is accounted for by interference with food digestion and loss of appetite.

**Enlargement of the Liver** though frequently noted as a part of the history, as a matter of fact is not common. Usually prolapse of the liver caused by adhesions is mistaken for enlargement. Temporary enlargement does occur from temporary blocking of the common duct, it also occurs in very acute cases. Fatty liver is occasionally seen. Local enlargement of that part of the liver in relation to the gall bladder is frequently seen in acute cases.

**Enlargement of the Gall Bladder** is due to blockage of the cystic duct with consequent filling up of the gall bladder, occasionally also enlargement follows slow obstruction at the termination of the common duct. The pear shape of the tumor moving with the liver on respiration is characteristic though it has been mistaken for right cystic kidney, right movable kidney, tumor of the colon and hydatid cyst of the liver. Most frequently hydrops of the gall bladder is mistaken for movable kidney. In hydrops the tumor lies directly behind the abdominal wall, points downward and returns quickly to its original position when displaced, a movable kidney is deeper situated and when replaced remains so temporarily. Congenital wandering kidney can be differentiated by bringing it to a part of the abdominal cavity where its shape can be de-

termined. If in doubt distension of the colon by air and ureteral catheterization may be employed. Should adhesions to the peritoneum be present the excursions of the gall bladder are restricted. The gall bladder may be so entirely covered by the liver or so encased in adhesions that it cannot be identified as the tumor. Difficulty is also experienced in the very stout or in patients with well developed abdominal muscles, and in cases in which inflammation causes muscular rigidity. A gall bladder not enlarged but the seat of chronic inflammation can at times be palpated by reason of its increased density.

**Tenderness on palpation** usually varies with the severity of the infection yet in serous cholecystitis it may be quite as pronounced as in suppurative or gangrenous inflammation, in the former, however, the sensitiveness subsides quickly while in the latter it persists. In the most severe cases tenderness is at first diffuse as this subsides the gall bladder tumor may be mapped out. No hard and fast rule can be drawn, however, for in some cases there is little to be palpated yet at operation a serious condition is found.

**Latent Gall Stones**—Aschoff believes that pure cholesterol stones can be formed without any symptoms whatever. Such stones are called latent or innocent. There is a considerable diversity of opinion as to whether innocent gall stones ever exist. Personally I believe that gall stones are the expression of an infected gall bladder, that a gall bladder once infected is always infected that such gall bladder may become at any time a source of real danger to the patient it naturally follows that recognition indicates cholecystectomy, whether the symptoms produced by the stone or inflammation are mild or otherwise. So many operations have been performed on the terminal pathology of this condition with an attendant high mortality and disability from already existing complications that I believe it time that early operation be advocated because early operation at a time when the disease is limited to the gall bladder means the saving of much discomfort and inefficiency later in life. At all events the patient should be given an opportunity to choose in the early stages of the disease. Medical measures with the idea of causing the passage of the stones are very ill advised, fortunately they are not apt to be successful. At best they can but serve to cause the extension of the disease beyond the gall bladder.

From the foregoing it is apparent that it is necessary to consider all of the symptoms of gall bladder disease and not to rely upon any one symptom. Fever is particularly not to be relied upon. In my own cases of empyema there has been but slight fever and even in gangrenous cholecystitis fever may not be marked. The pulse

is the best measure of the infection. In elderly persons pain is not felt very much and they may have gangrene of the gall bladder and yet complain very little. A differential diagnosis as to whether there is serous or gangrenous cholecystitis is hard to make. It can be made if the patient is carefully watched. But while watching the golden opportunity for a life saving operation may slip by. If the pulse is rapid and the temperature elevated, if there is extreme sensitiveness in the gall bladder region and evidence of peritoneal irritation such as vomiting and collapse, the diagnosis of severe cholecystitis is evident and immediate operation should be advised. Some observers have claimed they can hear a peritoneal friction sound in the cases in which the inflammation involves the peritoneal covering of the gall bladder.

*Adhesions*—As a result of pericholecystitis adhesions form especially between the neck of the gall bladder and the duodenum. These adhesions cause pain which cannot be differentiated from that caused by stone. The disturbances produced are at times equal to those of ulcerative cholecystitis or even of empyema. The latter diagnosis may be made but on opening the abdomen only a few adhesions about the neck of the gall bladder are found. Cholecystectomy cures these patients. Separation of the adhesions or cholecystostomy does not cure them. A gangrenous cholecystitis fortunately does not often result in perforation. In a case presenting tumor of the gall bladder, chill and fever, severe pain and general prostration and in which the pain suddenly disappears, the temperature rises, the general condition becomes worse and symptoms of peritoneal irritation ensue, perforation of the gall bladder is probable. However, in gangrenous cholecystitis high temperature is not always present and a large gall bladder cannot always be felt. The appearance of symptoms of peritoneal irritation—vomiting, collapse abdominal rigidity and general prostration lead to a diagnosis of impending or existing perforation. It is unwise to make a definite diagnosis as to whether a diffuse or circumscribed peritonitis has developed. This would delay the operation too long to be any value to the patient. The symptoms of gall bladder perforation differ but little from the symptoms of perforative peritonitis from appendicitis or from ulcer, if limited by adhesions they are those of slow perforation, while if but slight or no adhesions are present they are those of acute perforative peritonitis. The only difference is the possibility of jaundice. This may be due to the original pathological condition present in the gall bladder or ducts, if so it occurs early. Occurring late it means absorption of bile from the peritoneal cavity. Jaundice, is also occasionally seen in perforative peritonitis from other causes as the result of sepsis.

Other organs in the neighborhood may be involved in the inflammation and to the symptoms are then added those of the organ involved. The gall bladder may perforate by ulceration into the liver substance without characteristic symptoms. I have seen a small liver abscess caused in this manner which showed no symptoms. A large liver abscess from this cause is very rare.

Adhesions formed between the gall bladder and pylorus or duodenum or colon cannot be differentiated from the original gall bladder disease or diagnosed as complicating it unless such adhesions produce a change in the function of the parts affected. It may be in such cases there is no obtainable history of the original gall bladder disease and an operation is done for pyloric stenosis or for partial obstruction of the colon and it is only when the abdomen is opened that the original cause of the trouble is discovered. When the colon is attacked by an extension of the inflammation there will be localized distention. The inflammation produces a localized paresis of the portion of the intestine involved. Later on kinking or angulation due to adhesions may occur with symptoms of alternating diarrhea and constipation. Cholecystectomy and separation of adhesions will result in cure in most instances. Chronic pancreatitis results from infection carried through the lymph channels to the head of the pancreas. In cholangitis acute pancreatitis may result from the direct carrying of infection through the ducts.

*Inflammation of the Cystic Duct and of the Common Duct*—I have never seen a case of inflammation of the cystic duct unless a stone lay in the duct itself and produced changes in the duct wall by ulceration. Usually the stone is lodged in the neck of the gall bladder. When such a gall bladder is removed there is a distinct line of demarcation between the inflamed mucous membrane of the gall bladder and the normal lining of the cystic duct.

*Acute Inflammation of the Common Duct, Acute Choledochitis*—The symptoms at the onset are severe pain and jaundice. There is but slight enlargement of the liver, the gall bladder cannot be palpated. Choledochitis is nearly always the result of cholecystitis. It is mostly limited to the lower portion of the duct. It may complicate duodenitis. It may be caused by the passage of the infectious secretion of the gall bladder but more frequently by the passage of stones covered with infectious material. The most frequent site for the lodging of a stone is in the portion of the common bile duct behind the duodenum. The duct above it is enlarged. Some of these cases are without pain, the pain seems to depend upon the infection present. For instance if in the case of a tightly impacted stone in the third portion of the duct the duct above is opened and the bile therefrom is clear

and sterile a review of the history will show that there was no pain, while in cases that do have pain the bile is found infected. Pain is present only while the infection is active and while acute dilatation of the duct is progressing. Some few months ago I repeatedly washed out through an indwelling catheter the common bile duct of a patient who had an echinococcus cyst of the liver which had perforated into the left hepatic duct. If the fluid was allowed to flow in gently some of it appeared through the gall bladder fistula and some of it went on into the duodenum, if the fluid was allowed to flow forcibly pain was complained of, the explanation being that the more forcible flow produced stretching of the common duct. When the wall of the common duct has been extensively stretched and made rigid by repeated attacks of infection the pain will no longer be felt though the infection may be repeated. This is especially true of old people who have suffered repeated attacks of inflammation. There will be an increase of the jaundice and a sudden rise of temperature mostly accompanied with chills. Many times the rise of temperature and chills are the only symptoms, jaundice and pain being absent. In these latter cases the pain is not present for the reason given above, jaundice is not present because complete blockage does not occur.

In most cases of stone in the common duct without inflammation there is neither jaundice nor pain. In the course of operations upon cholecystitis with stone in the neck of the gall bladder confining the gall bladder contents investigation of the common duct will in some cases show a quiet lying stone. It will be noted in these cases that no infection of the common duct is present. The bile finds its way into the duodenum in spite of the incomplete obstruction. There is no jaundice and there is no pain because there is no inflammation. We can therefore say it is impossible to diagnose stones in the common duct by the clinical symptoms. Stone may be present in the common duct without any symptoms at all. In every case of cholecystitis operated upon the ducts should be investigated to determine the presence or absence of quiescent stone. The surgeon who does not do this will have so called "recurrences."

The symptoms of stone in the common duct complicated by inflammation are a sudden rise of temperature preceded by a chill, the temperature falls quickly only to recur after several days. These symptoms may continue for months or years. Malaria has often been diagnosed. With the fever there is jaundice and increasing pain with each attack. As before noted, however fever may be the only symptom. Its remittance depends upon the moving back and forth of the stone, when the pressure above a fixed stone has reached a certain point the duct is dilated and the infection passes around the stone. With the

stone thus loosened the infected bile rapidly drains off and the symptoms temporarily subside. Liver abscess has been diagnosed in such cases because of the intermittent character of the fever. The symptoms are immediately relieved by removal of the stone and temporary drainage of the common duct. If the opening in the duodenum is free duct drainage may be unnecessary but it is safer.

Should continuous fever supervene upon these symptoms of cholelithiasis it is evidence that the infection has progressed to the bile passages within the liver—severe cholangitis has resulted with the symptoms of continued fever, deep jaundice and general prostration, considerable swelling of the liver and continuous aching pain.

In chronic recurring obstruction of the common duct by stone the patient develops a cachexia quite similar to the cachexia of cancer. I have operated on several such cases in which a diagnosis of carcinoma was made and in which operation had been advised against. It is with a considerable degree of satisfaction that one is able to relieve these patients materially and in many cases cure them. Since it is difficult if not impossible to diagnose the cachexia of chronic stone obstruction from the cachexia of cancer it is best to do an exploratory operation on all of these cases. If there is a history of jaundice that changed from time to time until it became more and more marked the diagnosis lies between a stone in the ampulla of Vater and the closure of the duct from tumor or from a chronic pancreatitis. Carcinoma is a frequent cause. Slow steadily increasing jaundice points to closure of the duct by tumor or sclerotic pancreatitis, sudden jaundice to stone or inflammatory blockage. But the diagnosis is not easy and never certain so that the patient should not be denied the chance which operation affords.

Cases of cirrhosis of the liver with ascites may be complicated by gall stones. Such cases also should not be denied the relief which operation affords for both conditions.

*Conditions Resulting from Chronic Jaundice*—These conditions can all be prevented by early operation except when due to cancer. The most disagreeable symptom the patient has to bear is the intense itching of the skin and the insomnia which accompanies it. Bathing in hot soda solution just before retiring furnishes some relief. Hemorrhage into the tissues occurs as well as hemorrhage from the mucous membranes. In an attempt to increase coagulability of the blood and so prevent hemorrhages calcium lactate, ergolose and horse serum have been used.

The fact that it is impossible to always diagnose the exact pathological condition pres-

ent should not discourage us in attempting such diagnosis providing this does not delay operative measures

In diagnosing gall bladder disease it must be remembered that a stone may lay quiet in a sterile gall bladder and give no symptoms whatever. Symptoms will occur only when there is mechanical blockage at the neck of the gall bladder through stone or when inflammation is present. A positive clinical diagnosis of stone can never be made as the same symptoms that occur with stone may also occur with adhesions and with cholecystitis without stone. The diagnosis of the trouble as due to gall stones is pure guesswork, what we can diagnose is gall bladder disease. In appendicitis, we do not diagnose the enterolith which is so frequently present but the inflammatory disease. Gall bladder symptoms are so rarely found except as the result of inflammation that it can be said that gall bladder disease is never present without it. In about 90 per cent of cases stones are present but we cannot tell with certainty before operation whether stone is present in a given case or not. Nor is this at all important. It is embarrassing, however, to have told a patient that gall stones are present and then not to be able to produce the stones.

In cholangitis also stones may be present or absent

*Means of Confirming the Diagnosis*—Grube and Graft have made microscopical examinations of bile removed from the stomach in suspected gall bladder cases as suggested by Peck. The patient is given in the morning on an empty stomach some olive oil and in a half or three-quarters of an hour this is siphoned off. If gall stones are present there may be found microscopic and sometimes macroscopic collections of crystals. Some of these pieces are apparently broken off from larger stones and some appear as a free deposit. The findings are not constant. von Alderiff studied this question and came to the conclusion that when fat is placed in an empty stomach the pylorus relaxes and the secretions of the pancreas and liver pass freely into the stomach.

*X-ray Examination*—If we are to accept the newer pathology that the stones are but one of the expressions of an infected gall bladder and that a gall bladder once infected may always light up again and give symptoms and that even when severe symptoms are not produced yet the patient's life in many instances is made miserable from time to time and his efficiency impaired, then we must accept the X-ray find-

ing of gall stones as a welcome adjunct to diagnosis

Up to a few years ago gall stones were detected in a very small percentage of cases. Indeed it was deemed impossible by some Roentgenologists to show them at all. This was due to faulty technique in making the plates and a faulty interpretation of good plates when secured. Beck, who years ago made the first pictures of gall stones and who was very enthusiastic in his pursuit of this branch of diagnosis, was rather laughed at at first. With the present technique not only may the stone be made out in a considerable proportion of cases but the diseased gall bladder itself can be made out. If no evidence of calculi is found the patient should be submitted to a bismuth examination of the stomach, duodenum and colon, in a search for adhesions from cholecystitis without stones, or for the purpose of differentiating this condition from post-pyloric ulcer and appendicitis with reflex gastric symptoms. Even when there is no direct evidence of stone, this additional information is of value in determining whether or not there is a concomitant lesion, whether or not surgery is indicated and how difficult the operation will be.

#### AMENDMENTS TO THE CONSTITUTION AND BY-LAWS WHICH WILL BE PRE- SENTED FOR ACTION AT THE NEXT ANNUAL MEETING

'Amend the Constitution, Article IV, Section 1, by adding after the words, "in affiliation with this Society," the words, "all ex-presidents of this Society."

Amend the Constitution, Article VII, Section 2, by substituting \$400 for \$300, in the second line, which will then read "The state annual per capita assessment shall be \$400 and shall be collected by the county treasurers at the same time and as part of the county dues and shall be remitted to the state treasurer by the treasurer of each county society on or before the first day of June of each year."

Amend the Constitution, Article VIII, by adding Section 3, as follows:

"Section 3. In the interim between the sessions of the House of Delegates, unless and except referred to it for action by the House of Delegates, the Council shall order a general referendum vote in the manner prescribed in Section 1 of this Article, on all important legislative and economic matters affecting the general welfare of the medical profession, and until and after decision by the members of the Society, the Council shall take no action on such matters."

Amend the Constitution, Article V by adding the words "The President and one Vice-President of each district branch shall be members of the Council of the Medical Society of the State of New York."

Amend the By-Laws Chapter III Section 1, by adding the words "at 2 P M." The Section will then read "The House of Delegates shall meet annually on the day before the annual meeting of the Society at 2 P M."

## Medical Society of the State of New York

17 West 43d Street New York  
February 15 1918

The regular annual meeting of the Medical Society of the State of New York will be held on May 21 1918 at 11 A M in Chancellors Hall Education Building Albany N Y

ALEXANDER I AMBERT MD President  
FLOYD M CRANDALL MD Secretary

17 West 43d Street New York  
February 15 1918

The regular annual meeting of the House of Delegates of the Medical Society of the State of New York will be held on May 20 1918 at 8 P M in Chancellors Hall Education Building Albany N Y

ALEXANDER I AMBERT MD President  
FLOYD M CRANDALL MD Secretary

## 112TH ANNUAL MEETING

Tuesday, May 21st 11 A M

Chancellors Hall Education Building  
Calling the Society to order by the President  
Invocation by the Rev. Roch H Brooks  
Address of Welcome by Arthur J Bedell MD  
Chairman of the Committee on Arrangements  
Reading of minutes of 111th Annual Meeting Floyd M Crandall MD Secretary  
Address of Welcome on the part of the City Hon James R Watt Mayor City of Albany  
Address of Welcome on the part of the State Hon Charles S Whitman Governor State of New York  
Oration 'The Psychology of the War' Hon James M Beck LL.D. New York City

## PRELIMINARY SCIENTIFIC PROGRAM

ARRANGED BY THE COMMITTEE ON SCIENTIFIC WORK  
Sumner Lloyd MD Chairman New York  
Thomas J Harris MD Acting Chairman 104 E 40th Street New York  
Arthur Freeborn Chase MD New York  
Thomas F Laurie MD Syracuse  
James Knight Quigley MD Rochester  
Henry Hill Forbes MD New York  
T Wood Clarke MD Utica  
William G Russell MD Buffalo  
Arthur W Booth MD Elmira

## SECTION ON MEDICINE

Chairman Arthur Freeborn Chase MD New York  
Secretary Malcolm Sumner Woodbury MD Clifton Springs  
Place of Meeting County Court House

Tuesday, May 21st 2 30 P M  
Symposium on Nephritis

Pathology 'Charles Jack Hunt MD Clifton Springs  
Diagnostic Methods Nelson Wilson Janney MD New York  
Pathology Herbert U Williams MD Buffalo  
Treatment 'John Ralston Williams MD Rochester

Wednesday May 22d 9 30 A M

'Metastasis of Malignant Disease' Maurice Packard MD New York  
Experimental Studies in Cancer 'James B Murphy MD Rochester Institute New York (by invitation)  
Treatment of Drug Addiction Charles Francis Stokes MD Briar Cliff Manor  
Other titles and readers to be announced later

Wednesday, May 22d, 2 30 P M  
Joint Meeting with Section on Surgery  
Symposium on Gout

'Pathology and Diagnostic Methods' Emil Goetsch, MD Baltimore Md (by invitation)  
'Thyroid Function in Relation to Metabolism' Henry S Plummer, MD, Rochester Minn (by invitation)  
Medical Treatment Hermon C Gordinier MD Troy  
Discussion opened by Myron Botsford Palmer, MD Rochester  
Surgical Treatment Charles Wallace Webb MD Clifton Springs

Thursday May 23d 9 30 A M  
Symposium on Military Medicine

Title to be announced later Simon Flexner MD New York  
Other titles and readers to be announced later

## SECTION ON SURGERY

Chairman Thomas F Laurie MD Syracuse  
Secretary Arthur W Booth MD Elmira  
Place of meeting County Court House

Tuesday May 21st 2 30 P M

Recurrence of Symptoms following Operation on the Biliary Tract Homer J Knechtrocker MD Geneva  
A New Method of Treatment for Fracture of the Base of the Skull John Edward Jennings MD Brooklyn  
Congenital Malformations of the Spine with Report of Cases Charles Dwight Reid Jr MD Syracuse  
The Role of the Anesthetist in the Surgical Team John Joseph Buetner MD, Syracuse  
Dynamics of Abdominal Hernia Harry R Friel MD Buffalo

Wednesday May 22d 9 30 A M  
Symposium on Urology

'Surgical Treatment of Renal Tuberculosis' Herman Louis Kretschmer MD Chicago Ill (by invitation)  
Prognosis with Surgical Renal Tuberculosis William I Braasch MD Rochester Minn (by invitation)  
Clinical Significance of Congenital Anomalies of the Kidney and Ureter with notes on the Fetal Development by Dr Joseph R Losie Henry G Bugbee MD New York  
Congenital Hydronephrosis John T Geraghty MD Baltimore Md (by invitation)  
Perineal Prostatectomy Illustrated with moving pictures Parker Sims MD New York

Wednesday May 22d 2 30 P M

Joint Meeting with Section on Medicine  
Symposium on Gout

Pathology and Diagnostic Methods Emil Goetsch MD Baltimore Md (by invitation)  
'Thyroid Function in Relation to Metabolism' Henry S Plummer MD Rochester Minn (by invitation)  
Medical Treatment Hermon C Gordinier MD Troy  
Discussion opened by Myron Botsford Palmer MD Rochester  
Surgical Treatment Charles Wallace Webb MD Clifton Springs

Thursday May 23d 9 30 A M  
Symposium on Military Surgery

Control of Infections in Gun Shot Wounds, Walton Martin MD New York  
Other titles and readers to be announced later

SECTION ON OBSTETRICS AND  
GYNECOLOGY

Chairman, James Knight Quigley, M D, Rochester  
Secretary, H Dawson Furniss, M D, New York  
Place of Meeting, County Court House

Tuesday, May 21st, 2 30 P M

## Symposium on Backache

"From the Medical Standpoint," Lewis A. Conner, M D, New York  
"From the Orthopedic Standpoint," Percy Willard Roberts, M D, New York  
"From the Gynecologic Standpoint," Guy Leroy Hunner M D, Baltimore, Md (by invitation)  
"Remarks on Fibroid Tumors—a Clinical Experience," Edward Joseph Ill, M D, Newark, N J (by invitation)  
"Sterility," George Merrill Gelsner, M D, Rochester  
Discussion opened by William Hollenback Cary, M D, Brooklyn

Wednesday, May 22d, 9 30 A M

## Joint Meeting with Section on Pediatrics

"The Health of the Mother during Pregnancy in Relation to the Health of the Child," Ralph Waldo Lobenstein, M D, New York  
"Injuries at Birth, their Effect Upon the Child and Their Prevention," Barton Cooke Hirst, M D, Philadelphia, Pa (by invitation)  
"Causes of Still Birth, A Study of Five Hundred Cases at the Manhattan Maternity Hospital," J Clifton Edgar, M D, New York  
"The Establishment and Maintenance of Breast Feeding," J P Crozer Griffith, M D, Philadelphia, Pa (by invitation)  
"The Care of the Premature Child in the Home," Herman Schwarz, M D, New York  
Discussion opened by George W Goler, M D, Rochester

Wednesday, May 22d, 2 30 P M

"Some Observations on the Chemical Examination of the Blood and Urine in Normal Pregnancy and in Toxemia of Pregnancy," Joseph Rankin Losee, M D, New York

"The Role of the Liver in Eclampsia," William Mortimer Brown, M D, Rochester

"Two and a Half Years' Experience with the Conservative Treatment of Eclampsia," Ross McPherson, M D, New York

"Is Cesarean Section Justifiable in Eclampsia and Placenta Prævia," George Livingston Brodhead, M D, New York

Discussion on the papers of Drs Losee, Brown, McPherson and Brodhead opened by E. Gustav Zinke, M D, Cincinnati (by invitation), William Dixon Fullerton, M D, Cleveland (by invitation), and Harold Capron Bailey, M D, New York

Thursday, May 23d, 9 30 A M

"Nitrous Oxide Analgesia in Labor," (reader to be announced)

"The Undeveloped Uterus," Charles Lybrand Bonfield M D, Cincinnati, O (by invitation)

Discussion opened by James E King, M D, Buffalo.  
"Labor in Subnormal Pelvis," Francis C Goldsborough, M D, Buffalo

Discussion opened by Robert L DeNormandie, M D, Boston, Mass (by invitation)

"The Management of Breech Presentations," Paul Tompkins Harper, M D Albany

Discussion opened by Henry William Schoeneck, M D, Syracuse and Ross McPherson, M D, New York

An invitation has been extended to this Section from the President and staff of the new Anthony N Brady Maternity Home, to visit that institution during the meeting. Arrangements for this will be made and announced at a later date

## SECTION ON EYE, EAR, NOSE AND THROAT

Chairman, Henry Hall Forbes, M D, New York  
Secretary, Arthur J Bedell, M D, Albany  
Place of Meeting, County Court House

Tuesday, May 21st, 2 30 P M

## Symposium on New Growths of the Larynx

"Diagnosis," D Bryson Delavan, M D, New York  
"Treatment by Internal Surgical Methods," Hubert Arrowsmith, M D, Brooklyn  
"Treatment by External Surgical Methods," John McCoy, M D, New York  
Discussion opened by Thomas Henry Farrell, M D, Utica, and Robert Cunningham Myles, M D, New York  
"The Operative Treatment of Ptoxis," Walter B Lancaster, M D, Camp Devens, Mass (by invitation)

Wednesday, May 22d, 9 30 A M

"Recurrent Iritis," A Edward Davis, M D, New York  
"Intestinal Toxemia in Relation to the Eye, Ear, Nose and Throat," James Garfield Dwyer, M D, New York

Discussion opened by William H Haskin, M D, Thomas J Harris, M D, Arnold Knapp, M D, New York

"Case of Hysterical Anamnesis," George Ray Hare, M D, New York

"Visual Economics Relative to the New York State Compensation Law," Albert C Snell, M D, Rochester

Wednesday, May 22d, 2 30 P M

"Notes on the Epidemiology of Contagious Diseases of the Eye," Martin Cohen, M D, New York

"Diagnosis of Acoustic Tumors," Isidore Friesner, M D, New York

Certain Types of Meningitis Following Middle Ear Diseases from a Diagnostic and Therapeutic Standpoint," Truman Laurence Saunders, M D, New York

Report of Two Unusual Cases of Nasal Sinus Suppuration in Relation to Mastoidotomy," Hugh B Blackwell, M D, New York

"Hyperplastic Ethmoiditis, Diagnosis and Treatment" Jacob L Maybaum, M D, New York

Thursday, May 23d, 9 30 A M

## Symposium Malingering

"Standpoint of the Eye," Ellice Murdoch Alger, M D, New York

"Standpoint of the Nose and Throat," Emil Maver, M D, New York

"Standpoint of the Ear," John Alexander Robinson, M D, New York

Eye Examination in Connection with the Aviation Corps and Demonstration of Methods" David Henry Webster, M D, New York

"Ear Examination in Connection with the Aviation Corps and Demonstration of Labyrinth Tests," Capt William Alfred Scruton, M D, New York

Discussion opened by Philip D Kerrison, M D, and Wendell Christopher Phillips, M D, New York

The Chairman earnestly desires the names of members wishing to discuss any of the above papers, or who have interesting cases to report in order that if possible time may be given them. The earnest support and co-operation of the Eye, Ear, Nose and Throat men of the State is requested by the Chairman

## SECTION ON PEDIATRICS

Chairman T Wood Clarke M D Utica  
Secretary Frank Vander Bogert M D Schenectady  
Place of Meeting, County Court House

Tuesday, May 21st 2 30 P M

- 'The Diarrheal Diseases of Infants' Robert Sloan, M D Utica
- 'Intestinal Intoxications' Oscar M Schloss M D New York
- 'The Use of Dry Milk in Infant Feeding' Roger Herbert Dennett M D New York
- 'Pier,' Arthur Wight Benson M D, Troy

Wednesday May 22d 9 30 A M

Joint Meeting with Section on Obstetrics and Gynecology

- 'The Health of the Mother during Pregnancy in Relation to the Health of the Child' Ralph Waldo Lobenstein M D New York
- 'Injuries at Birth Their Effect Upon the Child and Their Prevention' Barton Cooke Hirst M D Philadelphia Pa (by invitation)
- 'Causes of Still Birth A Study of Five Hundred Cases at the Manhattan Maternity Hospital' J Clifton Edgar M D New York
- 'The Establishment and Maintenance of Breast Feeding' J P Crozer Griffith M D Philadelphia, Pa (by invitation)
- 'The Care of the Premature Child in the Home' Herman Schwarz M D New York
- Discussion opened by George W Goler M D Rochester

Wednesday May 22d 2 30 P M

- 'The Early History of Infantile Paralysis' Louis Curtis Ager, M D Brooklyn
- 'The Longitudinal Suture—Clinical Notes from the Willard Parker Hospital' Louis Fischer M D New York
- 'Blood Therapy in Infectious Diseases' Albert David Krayer M D Rochester
- 'A Live Plate Demonstration of Types of Vomiting' DeWitt Halsey Sherman M D Buffalo
- 'The After Treatment of Cases of Tonsillectomy' Charles Hendee Smith M D New York

Thursday May 23d 9 30 A M

Meeting at State Training School for Girls Hudson Leave Albany by special trolley Return by trolley or boat at conclusion of afternoon session

11 A M

- 'The New York State Training School for Girls' Hortense V Bruce M D Hudson
- 'Address' Mrs Joseph Allen President Board of Managers Hudson (by invitation)

1 P M

Luncheon as guests of the Institution Prepared and served by the pupils

2 P M

- 'The Nervous Spoiled Child' Lewellys Franklin Barker M D Professor Clinical Medicine Johns Hopkins University Baltimore Md (by invitation)
- 'The Mentality of Adolescent Delinquents' Jessie L Herrick M D Resident Physician at School
- 'The Causes and Prevention of Delinquency' William Healy M D Boston (by invitation)

## SECTION ON PUBLIC HEALTH, HYGIENE AND SANITATION

Chairman, William G Bissell M D, Buffalo  
Secretary, Willard J Denno, M D Albany  
Place of Meeting, County Court House

Tuesday May 21st, 2 30 P M

\* Symposium on Milk

Organized by Robert S Breed M D Bacteriologist Geneva Experiment Station Geneva (by invitation)

Wednesday, May 22d, 9 30 A M

'Public Health Administration' Charles J Hastings M D Medical Health Officer, Toronto Ontario and President American Public Health Association (by invitation)

Title to be announced C E A Winslow M D Prof Preventive Medicine Yale University, New Haven Conn (by invitation)

'Industrial Hygiene' Louis I Harris M D, Director Bureau Preventable Diseases Department of Health New York City

'Standardization of Antipneumococcus and Anti meningococcus Serum,' Augustus B Wadsworth M D M B Kirkbride and Ruth Gilbert (by invitation) Laboratory Department of Health New York State Albany

'Co operation Necessary to Achieve Results in Public Health Work' Charles S Prest M D Sanitary Supervisor Department of Health New York State

Title to be announced Francis Eustace Fronczak M D Health Commissioner Buffalo

Wednesday May 22d 2 30 P M

Symposium on Military Hygiene

Organized by Major Edwin L Behee MCNG U S A Retired formerly Surgeon 74th Infantry

Thursday May 23d 9 30 A M

'Food and Its Relation to Health' Edward Clark M D Acting Director Bureau of Child Hygiene Department of Health State of New York

'The Use of the Colloidal Gold Test in Public Health Work' Walter Zelinski M D 5th Laboratory Assistant Bureau of Laboratories Department of Health Buffalo (by invitation)

'Recent Advancements in the Diagnosis of Lobar Pneumonia' Oliver W H Mitchell M D Prof Bacteriology and Preventive Medicine Syracuse School of Medicine Syracuse

'Recent Factors in the Control of Venereal Disease' Matthias Neill Jr M D Deputy Health Commissioner Department of Health State of New York

'A Study of 229 Cases of Poliomyelitis' Frederick W Sears M D Sanitary Supervisor Department of Health State of New York

## HOTELS

Stanwix—150 Rooms \$1.00 per person \$2.00 per person with bath

New Kenmore—450 rooms single room \$1.50 up to \$2.50 two persons without bath \$2.50 two persons with bath \$3.00 \$4.00 \$5.00

Keelers (Men only)—Single \$1.00 \$1.00 \$2.00 double \$1.50 \$2.50 \$3.00

Wellington—200 rooms \$1.00 to \$3.00  
Ten Eyck—450 rooms \$2.00 \$2.50 without bath \$3.00 \$4.00 \$5.00 with bath \$1.00 to \$1.50 per person additional

The Hampton—200 rooms single \$2.00 \$2.50 \$3.00 \$3.50 \$4.00 double \$3.50 to \$6.00 all with bath

A list of the boarding houses may be secured by application at the Bureau of Information

## CORRECTION FOR COUNCIL MINUTES

Dr FLOYD M. CRANDALL, *Secretary*, January 17, 1918  
MEDICAL SOCIETY OF THE STATE OF NEW YORK,  
MY DEAR DOCTOR

In going over the minutes of your Council meeting, which appear in this current month's JOURNAL, I note under the report of the Special Committee on Counsel, that I had said that I did not feel bound by the resolution of the House of Delegates or the resolution of the Council to employ an assistant, etc.

I remember distinctly that the Chairman of the Committee corrected a similar statement which he showed to me, by striking out the words "that I did not feel bound by the resolution of the House of Delegates." I told him and the Council distinctly, that I did feel bound by the resolution of the House of Delegates but not by any modifying resolution of the Council.

I would appreciate it if that correction were made in the minutes if not already corrected. It may be that the printer unwittingly allowed that part of the statement to remain in.

With kind regards, believe me, Very truly yours,  
JAMES TAYLOR LEWIS, *Counsel*

## COMMITTEE ON PRIZE ESSAYS

The Committee on Prize Essays would again call to the attention of those desiring to present essays, that the papers must be in the hands of the Chairman of the Committee, Dr. Albert Vander Veer, not later than April 15, 1918.

In the November number of the NEW YORK STATE JOURNAL OF MEDICINE some subjects were suggested, but are in no sense mandatory. It is especially desired that research work, laboratory or clinical, should be presented.

For further information kindly communicate with the Secretary of the Society, 17 West 43d Street, New York City.

Committee, ALBERT VANDER VEER, *Chairman*  
EDWARD D. FISHER  
CHARLES G. STOCKTON

## PEDIATRIC SECTION

## ANNUAL CLINICAL MEETING

In accordance with a custom which has prevailed practically since the Pediatric Section was authorized by the State Society, a Clinical Day was held in New York on December 13th last. No better evidence of its popularity can be afforded than the fact that twenty-three members of the Section felt it worth while to attend. Of this number all but three represented communities outside of New York City. More than 50 per cent coming from cities and towns west of Albany.

The reason for the small number of New York men registered was that because of clinical facilities their attendance was discouraged, the idea being to show up-state pediatricians what New York is doing.

The following program was presented:

At the Rockefeller Institute—"Clinic on Treatment of Diabetes," Frederick M. Allen, M.D.

New Method of Estimating Acidosis in the Blood," Donald D. Van Slyke, Ph.D.

At the Neurological Institute—"Clinic on Newer Methods of Diagnosis and Treatment of Hydrocephalus," Charles A. Elsberg, M.D.

"The Surgical Treatment of Birth Palsy," Alfred S. Taylor, M.D.

At Children's Department, Bellevue Hospital—Practical Demonstration of Some Recent Clinical Methods, Linnaeus Edford LaFetra, M.D., Charles Hendee Smith, M.D., Oscar M. Schloss, M.D., and the House Staff.

"The Study of Undernutrition in Children," Charles Hendee Smith, M.D.

In the evening a joint session was held with the Pediatric Section of the New York Academy of Medicine.

## County Societies

## THE ONONDAGA COUNTY SOCIETY

SPECIAL MEETING, SYRACUSE

Tuesday, January 22, 1918

The Food Exhibit War Lunch and Public Meeting was held on January 22, 1918, at the Mizpah Hotel, First Baptist Church. The Onondaga Medical Society and Academy of Medicine of Syracuse were back of this effort to get before the public of this district, the subject of food economy and food substitution. Consequently, the committee, assisted by Miss Lena M. Pope, State Food Representative for Syracuse, and the managers of the Mizpah Hotel and Restaurant and several ladies in Syracuse and Skaneateles, produced a large display of war breads, dried vegetables, war cakes and meat extenders. Ladies were in constant attendance at these tables explaining to the people various receipts and seeing that the people took home one of the printed copies of these receipts which were on hand for distribution. The food exhibit lasted from 10 A. M. until 11 P. M. on the 22d, and was so popular that it was continued through the next day. During this time over eight hundred people saw the exhibit. The merchants of the city also had a commercial display in a large room adjoining.

At 6 o'clock ninety members of the two societies sat down to a wartime lunch served in the Mizpah dining room.

Following the luncheon Dr. W. Gilman Thompson, of New York City, gave a very interesting discourse on the subject of Food Values in relation to conservation and substitution. His talk was well illustrated by a large number of charts and sample or exhibits of various rations relative to the army and to everyday life. This meeting was public and was opened with a very patriotic address by Dr. M. E. Gregg, President of the County Society.

## MEDICAL SOCIETY OF THE COUNTY OF ERIE

ANNUAL MEETING, BUFFALO, N. Y.

Friday, December 17, 1917

The meeting was called to order by the President, Dr. Irving W. Potter, in the Buffalo Medical College.

The Secretary, Dr. Franklin C. Gram, read the minutes of the previous meetings and of all the Council meetings, all of which were approved.

Dr. William F. Jacobs, Chairman of the Committee on Membership, presented the applications of the following candidates all of whom were separately voted upon and elected to membership: Earl W. Thoma, Francis M. Kujawa, Sergeant Price Martin, Joseph F. Shanahan, Harold A. Patterson, Irving Franklin Gram, Nathaniel Byrnes, Francis J. Butlak, Vincent S. Mancuso.

Reinstatement of Dr. Harry B. Pinkerton, Buffalo.  
Transfer of Dr. W. E. McChesney from Monroe County.

The Treasurer, Dr. A. T. Lytle, presented his annual report which showed that 692 members were in good standing at the time of making his report, and that this number would possibly be increased by a large number of members who although in arrears, would undoubtedly pay before the close of the year.

President Potter appointed Drs. Mulford Lytle and Reimann as tellers for the annual election.

The report of the tellers showed that the following were elected for the ensuing year: President George F. Cott, Buffalo, First Vice-President, James E. King, Buffalo, Second Vice-President, Earl P. Lothrop, Buffalo, Secretary, Franklin C. Gram, Buffalo, Treasurer, Albert T. Lytle, Buffalo, Censors, John D. Bonnar, Francis E. Fronczak, Arthur G. Bennett, Archibald D.

Carpenter Frank A Valente, Chairmen, Committee on Legislation, Harvey R Gaylord, on Public Health Nelson G Russell, on Membership, William F Jacobs, on Economics John V Woodruff. The following were elected Delegates to State Society for 1918 and 1919 Arthur G Bennett, George F Cott Julius Richter Franklin W Barrows

Dr Woodruff, Chairman of the Committee on Economics submitted his annual report which contained the following recommendations:

1 That the by laws of the Medical Society of the State of New York be changed or amended so as to give the county societies the right to home rule in order that they may regulate their own affairs in accordance with their special needs and requirements

2 That our committee on Legislation be instructed to use its utmost endeavors to have the Compensation Law so amended that the individual employee may have the irrevocable right vouchsafed him by the Constitution to choose his own medical or surgical attendant without let or hindrance from the employer

On motion of Dr Rochester the report was received and the recommendations contained therein adopted

Dr Thomas H McKee, Chairman of the Committee appointed to visit the various Medical Societies within the County to discuss with them the subject of increasing medical fees to meet present economic conditions reported progress and asked for the continuation of his committee. The report was accepted and the committee continued

Dr John D Bonnar Chairman of the Board of Censors submitted his annual report giving a detailed account of the work performed by this Board during the year. The report was accepted and the financial statement contained therein was referred to the Council for audit

Dr Clayton W Greene Secretary of the Erie County Milk Commission submitted the annual report of the Commission

Dr Franklin W Barrows Chairman of the Special Committee on the Akron Home for Feeble-minded made a verbal report for this Committee

The resolutions adopted by the Auburn Academy of Medicine relative to the repeal of the State Narcotic Law were read by the Secretary and on motion of Dr Woodruff were endorsed by the Society

On motion of Dr Gram the President was requested to appoint a committee of three to draw up a suitable statement which would express the views of the Society, relative to the State Narcotic Law and its repeal

Treasurer Lytle stated that at a previous meeting of the Society the question of remitting dues of members who had gone to the Front had been referred to the Council with power. This would affect approximately 135 members who were thus far known to be in the service of the United States, and this number would undoubtedly be greater by next year. This question had been seriously considered by the Council and a recommendation had been adopted requesting the State Society to suspend the State dues of all members who had gone to the Front and to continue such suspension of dues during the continuance of the war. At a meeting of the State Council held December 8 this question was considered, and it was decided that as such action would be contrary to the Constitution the matter be referred to the House of Delegates

Dr Irving W Potter after delivering a brief address as the retiring President in which he thanked the members officers and various committees for their splendid co-operation during the year introduced the newly elected President Dr George F Cott who made a brief speech thanking the Society for the honor and outlined his policy for the coming year

## MEDICAL SOCIETY OF THE COUNTY OF GREENE

REGULAR MEETING CONSACKIE N Y

Tuesday, January 8 1918

The meeting was called to order at 1 o'clock at Cummings Hotel

It was moved seconded and carried that the Medical Society of the County of Greene does not approve of Section 209 of the War Tax Law of 1917 in so far as it imposes an extra tax on labor instead of investments

### SCIENTIFIC PROGRAM

#### Symposium on Venereal Diseases

Prevention of Venereal Diseases C C Durfee  
Treatment of Venereal Diseases James W Wiltse  
GU Surgeon St Peter's Hospital and Dispensary, Albany

## MEDICAL SOCIETY OF THE COUNTY OF SCHENECTADY

ANNUAL MEETING SCHENECTADY N Y

Tuesday December 11 1917

After calling the meeting to order at the Mohawk Club the following officers were elected for the ensuing year President Warren B Stone Schenectady, Vice President John J O'Brien Schenectady Secretary John E Burke Schenectady Treasurer Garret V Johnson Schenectady Delegates to State Society Frederick C Reed Henry G Hughes Alternates Edward S Vass Roy M Colth Censors Drs Louis Faust, Louis A Gould and Wm L Fodder

After a paper by the retiring President Dr Frank Vander Bogert on "Abdominal Diagnosis in Infancy," the meeting adjourned for luncheon

## MEDICAL SOCIETY OF THE COUNTY OF MONROE

ANNUAL MEETING ROCHESTER N Y

Tuesday December 18 1917

The meeting was called to order at 9 A M by the President Dr M B Palmer

The following officers were elected for the ensuing year President James P Brady Rochester, Vice President Edward G Nugent Rochester Secretary John Akron Rochester Treasurer Willard H Veeder Rochester Censors E H Howard M B Palmer, W T Mulligan O E Jones A C Snell, Delegates, C V Costello Floyd S Winslow, Alternates B J Duffy, J P Brady Members of Milk Commission S W Little J R Cullin

At the end of the business session Dr Palmer spoke on "The Physician for Service and at Home" and Dr G W Goler drew attention to the importance of having a larger number of physicians in service and urged upon them that more enlist in the Medical Reserve Corps

## MEDICAL SOCIETY OF THE COUNTY OF NIAGARA

ANNUAL MEETING

November 17 1917

The following officers were elected for 1918 President Albert M Rooker Niagara Falls, Vice-President S Wright Hurd Lockport Secretary Treasurer Charles L Preisch, Lockport Censors Flavius J Paler Edwin Shoemaker William A Peart Delegates to State Society Allan N Moore Walter A Scott, Alternates Eugene N S Ringeberg Lorton H Teeter

## CHENANGO COUNTY MEDICAL SOCIETY

ANNUAL MEETING, NORWICH, N Y  
Tuesday, December 11, 1917

The meeting was called to order at Guernsey Memorial Library, at 1030 A M

The following officers were elected for the coming year President, Carl D Mccham, Greene, Vice-President, George D Johnson, Secretary-Treasurer, John H Stewart, Norwich, Censors, D A Gleason, A H Evans, C W Chapin, Delegate, Thomas F Manley

## SCIENTIFIC SESSION

President's Address, Carl D Meacham, M D, Greene "Relation of Physician and Health Officer in the Control of Communicable Diseases," Harold W McNitt, M D, Norwich

"Treatment of Diseases of Eye, Ear and Throat Seen in General Practice," John H Seward, M D, Norwich

## MEDICAL SOCIETY OF THE COUNTY OF ONEIDA

ANNUAL MEETING, UTICA, N Y  
Tuesday, January 8, 1918

The following officers were elected for 1918 President, F M Miller, Utica, Vice-President, Howard J Teller, Rome, Secretary, William O Weiskotten, Utica, Treasurer, T Wood Clarke, Utica, Librarian, E R Evans, Utica, Censors, George M Fisher, William B Roemer, James E Gage, Morris J Davies, Hyzer W Jones, Delegate to State Society, Thomas Z Jones, Alternate, Edward R. Evans

Dr Charles B Tefft was elected a "retired member" of the Medical Society of the County of Oneida, and by vote of the Society, Dr Tefft is recommended for election as a "retired member" of the Medical Society of the State of New York

In regard to a communication of December 20th from the State Society, relative to the resolution passed by the Council of the State Society on December 8th, dealing with Section 209 of the War Tax Law of 1917, no definite action was taken, it being the opinion of several of the members that any action which might be taken by our Society would not affect the law as it now stands

## MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON

REGULAR MEETING, GENESEO, N Y  
Thursday, January 10, 1918

The meeting was called to order by the President, F V Foster, M D, of Caledonia

The matter of payment of state assessments of those members of the Society who have entered the government service was discussed, and the Treasurer was instructed to pay the state assessments of those members of the Society who are in active service in the Medical Reserve Corps

Communication relative to a repeal of the present State Law respecting "Habit Forming Drugs" was read and discussed, and, on motion, the resolutions of the Auburn Academy of Medicine were endorsed, and the Legislative Committee, consisting of Drs Bowen, Shanahan and Collier, were instructed to communicate this fact to the Chairman of the Legislative Committee of the State Society

Dr Shanahan extended an invitation to the Society to hold the next meeting at Sonyea, on the first Tuesday in May. This invitation was accepted

Dr C C Duryea, of Schenectady, was then introduced and presented a paper on "Venereal Prophylaxis," which paper was freely discussed

## MEDICAL SOCIETY OF THE COUNTY OF CATTARAUGUS

ANNUAL MEETING, SALAMANCA, N Y  
Tuesday, January 8, 1918

The meeting was called to order in the Masonic parlors

The following officers were elected for 1918 President, John A Johnson, Olean, Vice-President, Erwin M Coss, Cattaraugus, Secretary and Treasurer, Myron E Fisher, Delevan, Delegate to State Society, Edward Torrey, Alternate, Myron C Hawley, Censors, Marshall L Hillsman, William B Johnston, George W Winterstein, Myron C Hawley, Jacob E K Morris

Dr Edward H Marsh, Sanitary Supervisor, Brooklyn, read a paper, the subject of which was, "Treatment of Venereal Disease as a Public Health Problem"

Dr Edward A Sharpe of Buffalo, read a paper on "Relation of Syphilis to Nervous Diseases"

Both papers were very interesting and instructive, and the Society extends its sincere thanks to the gentlemen for the same

## MEDICAL SOCIETY OF THE COUNTY OF ORLEANS

ANNUAL MEETING, MEDINA, N Y  
Friday, October 19, 1917

After calling the meeting to order the following officers were elected President, George F Rogan, Medina, Vice-President, Ralph E Brodie, Albion, Secretary-Treasurer, LaVerne F Waters, Knowlesville, Censors, Edward Munson, Leon G Ogden, Charles E Padelford, Delegate to State Society and Chairman Committee on Legislation, John Dugan

## SCIENTIFIC PROGRAM

Dr Alfred H Clark, Buffalo, read a paper on "The Treatment of Wound Infections by the Carrel-Dakin Method"

Dr Albert T Lytle, Buffalo, President of the Eighth District Branch, was present and addressed the meeting

## Books Received

DISEASES OF THE SKIN, THEIR PATHOLOGY AND TREATMENT By MILTON B HARTZELL, A M, M D, LL D, Prof Dermatology Univ Pennsylvania 51 colored plates, 242 cuts in the text J B Lippincott Co, Philadelphia and London, 1917 Price, \$7.00

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES FOR THE FISCAL YEAR 1917 Government Printing Office, Washington, D C

A CLINICAL TREATISE ON DISEASES OF THE HEART FOR THE GENERAL PRACTITIONER By EDWARD E CORNWALL Rebman Co, New York, 1917 Price, \$1.50

THE TREATMENT OF INFANTILE PARALYSIS By ROBERT W LOVETT P Blakiston's Sons & Co, Philadelphia, 1917 Price, \$1.75

LOCOMOTOR ATAXIA (Tabes Dorsalis) An Introduction to the Study and Treatment of Nervous Diseases, for Students and Practitioners By WILLIAM J M A MALONEY, M D (Edin), Fellow Royal Society of Edinburgh, N Y Academy of Medicine, N Y Neurological Society, Neurologist Central & Neurological Hospital Illustrated D Appleton & Company, New York, London, 1918

AN INTERNATIONAL SYSTEM OF OPHTHALMIC PRACTICE, edited by WALTER L PYLE, A M, M D, Phila Member American Ophthalmological Society MEDICAL OPHTHALMOLOGY, by ARNOLD KNAPP, M D, Prof Ophthalmology, Columbia Univ Exec Surg Herman Knapp Memorial Eye Hospital 32 illustrations P Blakiston's Son & Co, 1012 Walnut Street, Philadelphia, Pa Price, \$4.00

INTERNATIONAL CLINICS, Vol IV, 27th Series, 1917 J B Lippincott Co, Phila and London, 1917

## Book Reviews

**CANCER ITS CAUSE AND TREATMENT** By L. DUNCAN BULLLEY, A.M. M.D. Senior Physician to the New York Skin and Cancer Hospital. Vol. II. Paul B. Hoeber, 67 East 59th Street, New York City. 1917. Price, \$1.50.

Although this book is numbered volume two it is an enlarged edition of a work by the same author published in 1915 under a similar title.

While the views of the author are not those generally held by the profession there is much in the present work that gives food for thought as for instance the chapter on prophylaxis. The section on diet could well be followed by any physician who has patients suffering from overeating.

Many statements that were under elucidated in the older work have been corrected. The presswork and binding are as good as one would expect in a low priced book.

On the whole the book is worth reading.

**EMERGENCY SURGERY**, by JOHN W. SLUSS A.M., M.D. F.A.C.S. Associate Professor Surgery, Indiana University School of Medicine. Surg. and Ex. Superintendent Indianapolis City Hospital. Fourth edition revised and enlarged. 685 illustrations, some printed in colors. P. Blakiston's Son & Co. 1012 Walnut St. Philadelphia, Pa., 1917. Price \$4.00 net.

This handy complete little manual is now in its fourth edition. It comprises the more essential knowledge appertaining to this urgent field. It is profusely illustrated. Minor corrections have been made and that part of the text relating to wound infections of war has been revised to meet the more advanced methods now in successful use.

As in past editions the author has attempted to present a guide for uncertainty on the part of the medical practitioner in times of urgent major surgery.

At the present time when war conditions may force many medical men to take up this work such a book is of particular value. They will find assistance in the beginning of their tasks.

ROYALE H. FOWLER

**PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING** with illustrations by OSCAR W. BETHEA, M.D. Ph.G. F.C.S., Assistant Professor of Materia Medica, Tulane University, Louisiana. Second edition revised. F.A. Davis Co. Publishers, Philadelphia. English Depot Stanley Phillips, London. 1917.

While the term *Materia Medica* may have gone out of fashion, Bethea has put forth a work that could not easily carry any other title. Practically all drugs that have any excuse for existence are briefly mentioned. Indeed brevity seems to characterize the subject matter throughout. Only the recognized actions and preparations being considered.

Typical prescriptions abound—there must be thousands of them. Prescription writing as a science or art is treated *in extenso* and in this respect the book is both complete and valuable.

Many timely suggestions are supplied and the manner of presenting them is attractive and impressive.

M. F. DEL

**THE ROENTGEN DIAGNOSIS OF DISEASE OF THE ALIMENTARY CANAL**, By RUSSELL D. CARMAN, M.D. Head Section on Roentgenology, Division of Medicine, Mayo Clinic and ALBERT MILLER, M.D. First Assistant in Roentgenology at the Mayo Clinic. Octavo of 558 pages with 504 original illustrations. Philadelphia and London W. B. Saunders Company. 1917. Cloth \$6.00 net. Half Morocco \$7.50 net.

This publication may be called *unique* in American literature on gastro-intestinal roentgenology in two respects. (1) It is really wanted—it fills a gap. (2) It is conservative and reliable.

The authors have not only crystallized a much scat-

tered and variegated literature but have also given freely of their own treasury of experience. Even their mistakes are valiantly placed before us, that we may the better learn our lessons.

Those who, through mere habit or perhaps through sheer ignorance or other factor not yet revealed to us still experience a subtle delight in referring disparagingly to the value of X-ray diagnosis of the alimentary tract, should read the opening paragraph on 'gastric cancer.' Modest as the authors are known to be, they make the authoritative statement that 95 per cent of gastric carcinoma, operated on in the Mayo clinic showed unmistakable roentgenological signs of the disease.

How near to this can any other diagnostic method approach?

Throughout the book it becomes evident that the bigness of the roentgenologist is directly proportional to the size of the physician in him. A point which the general profession has not yet come to realize. The 'radio-grapher' and 'roentgenologist' are still too frequently synonymized.

The authors combined experience in a famous clinic, 15 physicians and surgeons respectively, is what enabled them to present us with this authoritative work on roentgenology.

Every page bespeaks the master. It is safe to predict that no roentgenologist's library will be without this American classic.

E. J. LEAVITT

**MALINGERING AND FEIGNED SICKNESS** With Notes on the Workmen's Compensation Act 1906 and Compensation for Injury, Including the Leading Cases Thereon. By Sir JOHN COLLIE, M.D. J.P. Illustrated. Second edition revised and enlarged. London. Edward Arnold. 1917. Cloth \$5.00.

This well known work of Sir John Collie has been rewritten. Several new chapters on subjects that were not included in the first edition have been added. The work as it now appears is the most up to date and authoritative of any in the English language.

Among the new chapters that seem worthy of emphasis are Self-inflicted Injuries, Malingering in Skin Affections, Glycosuria and Malingering, Workmen's Compensation Act, The Effect of Recent Legislation upon Sickness and Accident Claims and Suppuration and Its Prevention.

Although this work is essentially English and the legal discussions are based upon the laws of Great Britain, American physicians can get considerable help from this book.

The publication of the second edition is timely, for with the advent of new workmen's compensation laws and the examination of large bodies of men for the war draft all physicians need more or less help in detecting malingerers. This help can be found in the book under discussion.

The volume contains 664 pages it is well indexed and is well printed and bound.

J

**FOOD FOR THE SICK** A Manual for Physicians and Practitioners. By SOLOMON STROUSE, M.D. Associate Attending Physician, The Michael Reese Hospital. Professor of Medicine at the Post Graduate School, Chicago and Maude A. Perry Dietitian at the Michael Reese Hospital, Chicago. 12mo of 270 pages. Philadelphia and London W. B. Saunders Company. 1917. Cloth \$1.50 net.

This little book is meant to supply patients with something more definite to guide their dietetic measures than can be imparted verbally by the physician or remembered by the patient.

Most hospital clinics and many practitioners have recognized and supplied this want to a certain extent by having typewritten or printed instructions prepared and

given to the patient when leaving the hospital or at the time of consultation

The language of this manual is simple, and free enough from technical terms and detail to be readily understood by the patient of average intelligence, and at the same time sufficiently scientific and exact to be used as an aid in the treatment of patients by the physician. The average composition of the ordinary American food products is first set forth with their caloric value per pound and then the various diseases are taken up as to their dietaries, with caloric values and specimen menus. The method of preparation of foods and dishes is then gone into in detail from the standpoint of the private and individual patient, rather than from the hospital or institutional aspect.

The text expresses views fully in accordance with the latest recognized methods of treatment, especially, may it be said, regarding those "bêtes noires" of the practice of medicine, namely, diabetes and nephritis.

W H DONNELLY

**A TEXT-BOOK ON THE PRACTICE OF GYNECOLOGY** For Practitioners and Students. By W EASTERLY ASHTON, M.D., LL.D., Prof Gynecology Graduate School Medicine, University of Pennsylvania. Sixth edition, thoroughly revised. Octavo 1,097 pages, 1,052 original line drawings. Philadelphia and London. W B Saunders Company, 1916. Cloth, \$6.50 net, Half Morocco, \$8.00 net.

This book must appeal to all teachers of gynecology as the one best accepted to his needs. Its numerous illustrations and systematic arrangement of the text are ideal for the student of women's diseases. The chapter on examination methods is especially good, as is also the one on post-operative care. While all of us can never be of one opinion regarding post-operative care, nevertheless, a text-book in gynecology should have such a chapter as a working basis for the student and interne.

The work on ovarian cysts is especially detailed and exact, while the examination of the bladder and kidney conditions makes this more valuable than most gynecological books. The edition commends itself in every way to the student and practitioner of medicine.

**NOTES FOR ARMY MEDICAL OFFICERS** By Lt-Col T H GOODWIN, R.A.M.C. With an Introductory Note by Surgeon-General WILLIAM C GORGAS, U.S.A. Illustrated. Phila. Lea & Febiger, 1917. Cloth, \$1.00 (Medical War Manual No. 2, Authorized by the Secretary of War and under the Supervision of the Surgeon-General and the Council of National Defense).

This small book contains a resume of a series of lectures by the author, delivered at the Army Medical School. The book describes in detail the organization of the British Medical Service in the field and the suggestions which are made will be extremely valuable to any member of the U.S.A. Medical Corps who goes to the front.

E H M

**THE MEDICAL CLINICS OF NORTH AMERICA**, Vol I, Nos 2-3. September and November 1917. Illustrated. Octavo. Philadelphia and London. W B Saunders Company, published bi-monthly. Price per year Paper, \$10.00, Cloth, \$14.00.

One is apt to look through a key hole and think that he sees the universe—to stand upon an ant hill and think that his observation includes the whole world. In other words, because we can see no more from where we are it does not mean that there is no more to be seen if we change our location. So even in medicine—we do work in a certain way, i.e., examine patients in a certain routine, institute certain laboratory procedures, etc., and we honestly believe after we are

through that this is all that can be done for the patient. However, if we could only "change our location" and see what others are doing in the various clinics of the world, we might change our opinion. Since most of us cannot do this (for various reasons), the next best thing is to describe the procedures at these clinics, and bring them home to you. This the Medical Clinics of North America attempts to do, and does it very well. The cases are well studied, thoroughly "worked up," and ably presented.

WILLIAM LINTZ

**SYPHILIS AND THE NERVOUS SYSTEM FOR PRACTITIONERS, NEUROLOGISTS and SYPHILOLOGISTS**, by Dr. MAX NONNE, Chief Nervous Dept General Hospital, Hamburg, Eppendorf. Authorized translation from second revised and enlarged German edition by CHARLES R BALL, B.A., M.D., Chief Nervous & Mental Department, St Paul Free Dispensary, Neurologist, St Joseph & Bethesda Hosps. 98 illustrations in text. Second American edition revised. Philadelphia and London, J B Lippincott & Co, 1916. Price, \$4.00.

This excellent work of 440 pages, including a helpful bibliography, is "written out of the practice for the practice." It is rather satisfying to come upon frequent and apt clinical case references here and there in the subdivisions of the work. It brings the entire book nearer to us. The book throughout maintains the stamp of the personal investigator and the results of his investigation and practice are conservatively set forth.

This book, the second edition, appears six years after the first edition, and the important new discoveries and scientific data, especially etiological, have been thoroughly utilized in the author's studies of abundant clinical material.

The general arrangement of the second edition remains the same. The principal changes or additions being in the chapters on general paralysis, tabes, laboratory tests and specific therapeutics.

In his introductory chapter he sets forth certain useful conclusions which are well to keep in mind as guide posts throughout the book since he lays considerable emphasis upon the relationship of accompanying and inter-current morbid conditions.

The establishment of specific infection does not prove necessarily that the present existing nervous disorder is of specific nature. The etiological value of established syphilis has limitations because of a combination of causative factors. The success or failure of therapy is only conditionally to be regarded as a means of differential diagnosis.

The pathology of nervous syphilis is, as formerly, classified under four heads, viz new growths, chronic hyperplastic inflammations, disease of the blood vessels and fourth, parenchymatous degenerations. It is seldom that any one of the four types is alone found, therefore the former division of the disease into the primary, secondary and tertiary stages cannot be maintained. Spirochaetes are known to be present in all three stages as well as also the Wassermann reaction.

It is well to heed the author's reiteration as to the difference that exists between an anatomical and clinical recovery. A specific meningitis may be called cured if in the place of inflammatory infiltration scar tissue has been substituted. Yet as to the clinical anomalies it makes little difference whether caused by specific or connective tissue which has displaced more or less nerve substance. This is especially true of spinal cord affections.

The chapter on neuroses and psychoses deals fully with the various kinds of disorders and also emphasizes the fact that there is no mental disturbance characteristic of syphilis. Attention is also called to the fact that a psychosis may develop during anti-specific treatment and even this in itself is no proof of the non-specific origin of the mental upset.

The close relationship between so-called brain syphilis

and paresis are fully discussed and his ideas coincide fully with others as to the necessity of any technical differentiation so far as classification is concerned. The author thinks it is possible for cases of genuine paresis to recover, however the results of his ten cases covering a period of 19 years leaves one somewhat in doubt as to the general statement. The author considers that tabes is simply a general paralysis of the spinal cord and adds that he has never seen a case of tabes cured by mercurial treatment, although at the beginning a restricting or retarding influence may be brought about.

The subject of hereditary syphilis contains nothing new and if anything simply confirms the attitude of some recent American writers that syphilis does not play the highly important etiological role in mental defectiveness and idiocy.

The chapter on the behavior of the Wassermann reaction in the blood and spinal fluid is quite extensive. Details are given as to the various techniques. Value is placed on the goldsol reaction provided it is corroborated by other reactions. Its most constant finding occurs in paresis. His belief in clinical diagnostics is still evident since he states that the pivot of medical examination does not entirely lie in the laboratory yet he would not detract from the excellent and that the laboratory gives to the clinician.

His final chapter is one devoted to the Salvarsan therapy. In detail the methods are given as to its administration and the dangers real and apparent accompanying its administration.

In summarizing he recognizes the quicker and more far reaching results obtained by it than with mercury and iodine. He still holds that Salvarsan is contra-indicated where the vital centers are involved but that it is specifically indicated in gummatous disease. Emphasis is placed upon the importance of the intensive method of treatment of lues.

With reference to cerebrospinal syphilis he concludes "in by far the greater number of cases the superiority of Salvarsan over mercury and iodine is not apparent."

E. M. SOMERS

**OBSTETRICS A Text Book for the Use of Students and Practitioners** By J. WHITRIDGE WILLIAMS Professor Obstetrics Johns Hopkins University. Obstetrician in Child Johns Hopkins Hospital. Fourth enlarged and revised edition. Seventeen plates six hundred illustrations in the text. New York and London: D. Appleton & Co. 1917.

This latest edition of Prof. Williams' book the first in five years fulfils in every way what we would expect from the pen of a teacher of his caliber.

This latest edition has been enlarged and brought up to date and the illustrations and diagrams have been increased in number. The pathology has been gone into more deeply in various chapters and especially in the article on premature separation of the placenta. The demonstration of the actual infiltration of the uterine musculature by the blood cells is the original work of Prof. Williams and commends itself for further study. The toxæmias of pregnancy are treated in an exhaustive manner and the literature brought up to date. There is much that we have still to learn about these toxæmias especially as regards the chemistry of the urine and blood and this chapter should prove of value to the research worker as well as the student of medicine.

Prof. Williams' exhaustive study is related to prenatal care shows its results in the article on syphilis. The author shows that 20 per cent of foetal deaths from the period of viability to a period two weeks post partum are due to syphilis also that 40 per cent of all still born premature infants are syphilitic. Contrary to our old ideas he states that "syphilis plays but a small part in the causation of early abortion." Our modern ideas on this subject are well elaborated in this work.

The chapter on anesthesia in obstetrics has been somewhat enlarged to include the author's ideas on morphine narcosis, scopolamine narcosis and the use of nitrous oxide gas. The former is recommended in the first stage of labor in neurotic women while the gas is used only in the expulsive stage. The author's work in funnel pelvis has been masterly, and his detailed description of the necessary pelvimeters and methods of menstruation should be read by every practitioner of medicine. It is a subject little understood by the general practitioner and the deformity is directly responsible for many foetal deaths as well as severe perineal lacerations.

The chapters on operative obstetrics have all been enlarged and new illustrations added notably under the caption of abdominal cesarean section.

The detailed technique of the classical operation is given and also that of Kustner's extra peritoneal methods. The indications for the classical operation in clean cases have been enlarged to include many border line pelvis and rightfully so but the author does not believe that we should use the operation indiscriminately in eclampsia and placenta previa. The writer of this critique however is of the opinion the cesarean operation is indicated (in some cases of placenta previa) central to save the life of the foetus) as well as in some cases of full term primipare with eclampsia.

Vaginal cesarean section is described in detail though we do not believe the author is broad enough in his indications.

Pupotomy is given its proper place as an obstetric operation in the neglected border line pelvis especially the funnel type but we are still not convinced that it is a safe operation for the primipara except in the most skilled hands.

Altogether this new edition in every way fulfils our expectations and on account of its exhaustive bibliography must commend itself to the research worker as well as the student of obstetrics.

**OBSTETRICS NORMAL AND OPERATIVE** by GEORGE PEASLEE SHEARS B.S. M.D. and E. E. SHEARS. 419 illustrations. 2nd edition revised. Philadelphia: J. B. Lippincott Co. 1917. Price \$6.00.

A very few months ago the writer reviewed this work on obstetrics. After a careful resume of the work as a whole he said "it is more than a good book a book for the general practitioner or the specialist, and to purchase it would be six dollars well spent."

In this review of the second edition little more is to be added except to repeat what previously has been said. Upon looking over Dr. Shears' volume the writer would be lacking in appreciation of a work thoroughly and well done did he fail to grasp this opportunity to urge you who may consider adding to your library to order this book and add it to your collection.

Although we read "Second Revised Edition" the changes are minor in character so complete and correct was the first edition, and upon a casual inspection hard to discover.

One is not surprised that a book of this character goes so quickly into another edition. I. S. W.

**MECHANISMS OF CHARACTER FORMATION: An Introduction to Psychoanalysis** By WILLIAM A. WHITE M.D. Macmillan Co. New York 1916. Price, \$1.75.

As indicated by its title page this book bears upon material relating to the mind and the various reactions and associations of motives impelling the individual to adopt one course or another in the formation of character which determines the type and worth of a person.

The object elucidated by the author is to outline broad general principles underlying the growth of one's character so that a thorough understanding of these

facts will make possible their practical application in every-day life

The most striking feature of the book is its freedom from abstract concepts and adherence to concrete examples of various mental phases and resultant acts

It is of value not only from the practitioner's standpoint in the treatment of various mental conditions, but also on account of the many suggestions it may give the physician for his own conduct in the daily affairs of his life

One cannot read and digest the contents of this book without much profit as well as pleasure

H G DUNHAM

**THE NEW METHOD IN DIABETES** The Practical Treatment of Diabetes as Conducted at the Battle Creek Sanitarium, Adapted to Home Use, Based Upon the Treatment of More Than Eleven Hundred Cases By J H KELLOGG, M.D., LL.D., Author of "Neurasthenia—Its Causes and Cure," Battle Creek, Mich., Good Health Publishing Co., 1917 Price, \$2.50

This little handbook was written for the guidance of nurses and of patients themselves in the home treatment of diabetes, therefore it is written in plain style without the use of complicated terms which might confuse its readers

The treatment known generally by the name of the "Allen" treatment, while commended, is called by the author "the so-called Allen treatment," and "the credit given to Guelpa, of Paris, who, he says, has practiced this method for years. Certain procedures are considered as essential to exact study of the disease, as the quantitative and qualitative examination of urine, the weighing of every particle of food and the recording of its caloric value, the daily weighing of the patient at the same hour while fasting, the weekly determination of acidosis by the examination of the residual air, and finally, a careful examination of the stools at frequent intervals to keep track of the intestinal flora

The greater part of the book is devoted to a consideration of the question of hygiene and exercise and to a list of recipes of diabetic foods and detailed instructions as to their preparation

It may be said to be a safe book to place in the hands of the laity

W H DONNELLY

**CEREBELLAR ABSCESS, Its Etiology, Pathology, Diagnosis and Treatment, Including Anatomy and Physiology of the Cerebellum** By ISIDORE FRIESNER, M.D., Adj. Prof. Otolaryngology and Asst. Aural Surgeon, Manhattan Eye, Ear and Throat Hosp., and ALFRED BRAUN, M.D., F.A.C.S., Asst. Aural Surgeon, Manhattan Eye, Ear and Throat Hosp., Adj. Prof. Laryngology, N.Y. Polyclinic. 10 full-page plates and 16 illustrations. New York: Paul B. Hoeber, 67 East 59th Street, 1916. Price, \$2.50

The anatomy of the cerebellum is included in full, both minute and gross. Notable is the locating of the parts in intimate relation with the sinus internal auditory meatus, and the saccus endolymphaticus

Under the head of Physiology is found a number of areas which have been definitely shown to control certain movements of the shoulder in and out, etc. Some may desire a more elaborate localization of function, but the authors have taken a reasonably conservative attitude on matters, which resemble the claim in that there is something on both sides with the meat in the middle

Some eighty-six cases have been gathered from the literature on the subject since 1907. The prominent symptoms have been figured out as to frequency, etc., giving a very good idea of the practical aspect of the average case of cerebellar abscess

The description of the newer cerebellar symptoms is a good piece of work, and although, as has been said before, some will wish that the newer ideas of the diag-

nosis of vestibular conditions had been given with greater detail, we should remember that all do not agree as to what is to be the permanent value of much of this work

The statistics are full as to source of infection, number of cases, per cent of recovery, route of infection, condition of the dura, etc., and the practical application of the lessons drawn therefrom is made in a convincing manner

Not the least commendable feature is the differential diagnosis, which is devoid of hair-splitting detail or methods useful once in a blue moon

Cerebellar abscesses are not common in any aurist's experience, and the effort made by these gentlemen should be augmented, from time to time, by them preferably, but if necessary, by others, so that in a few decades this can grow to be the incomparable source of information along these lines. It is well worth while as it is, but the opportunity to make it even more valuable should not be permitted to pass

RALPH I. LLOYD

**THE PROBLEMS OF PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY OF METABOLISM** By Dr. OTTO VON FURTE, Professor Extraordinary of Applied Medical Chemistry in the University of Vienna. Authorized Translation by ALLEN J. SMITH, Professor of Physiology and Comparative Pathology, in the University of Pennsylvania. 667 pages. J. B. Lippincott, Philadelphia and London, 1916. Price, \$5.00

As the title of this volume implies, it carries and of the newer problems in respect to the metabolism toward health and disease. Twenty-five chapters cast in the form of lectures on the subject—title heading each chapter—prepared with books of a quarter of a century ago, with food, its disposal in the organism, laboratory each kind takes in physiological and pathological conditions, there is a broad contrast in the method of presentation. The old dogmatic guide appeared and in its place a frank and fearlessly readable of a multitude of more or less plausible and satisfactorily proven theories has taken its place. The author, being an acknowledged authority in the field, can be trusted by the reader as in order safe guide through the maze of conflicting statements now struggling for acceptance among the petent. "The book," says its translator, "is a guide to thought than to technicalities of fact, of fact, and in this appeals alike to students, biologists, and physicians"

In the first chapter there is a lucid exposition of the nature of protein digestion in the stomach, followed in a later chapter by a similar discussion of protein digestion in the intestine. Still other chapters handle the subjects of carbohydrate digestion, metabolism, fat digestion, nutritional requirements of the body, processes of oxidation, etc. Among the subjects of interest are chapters dealing with creatin and creatinin, acidosis (alkalosis, acetone), the dextrose and nitrogen (D/N) ratio in the relationship of the adrenals, thyroids, and physics to carbohydrate digestion, obesity and fat, betes, gout, etc. In discussing diabetes he gives consideration to the various theories with due attention to the oatmeal, mineral water and starch-free bread of treatment. In case of malnutrition from various causes, he favors parenteral administration of food, but, of course, insists upon its being completely digested. Proteins must be reduced to amino acids and starches to dextrose. To inject food directly into the circulation in any other form would lead to more or less serious consequences

To the writer of this review no part of the volume is so fascinating as that which deals with the enzymes. Around these there centers at present some of the most interesting and important considerations of physiology

Von Furth's treatment of pro enzymes enzymes, secretin, enterokinase, etc. is concise clear and sufficiently complete to answer the requirements of the average medical man. The puzzling facts in respect to the activation of trypsin and the way it behaves toward gelatin as compared with other proteins are fully set forth. He credits Pavlov with the discovery of the trypsin zymogen but alters the name of the Russian physiologist to Pawlow. Imagine Adam's spouse being referred to as Eve instead of Evc. or the velvet so often worn by her modern daughters as welvet. This German habit has evidently penetrated into Austria as it has to the United States. It has not however, hindered him from giving a due mead of praise to Pavlov whom he speaks of as the 'incomparable' mentioning a number of useful processes invented by the Russian.

The closing chapter of the volume deals with the old and duly recurring enigma of fever. The author does not think that protein destruction carbohydrate destruction fat destruction chlorine retention water retention and other such clumped causes have any important direct effect upon the temperature. With Traube he seeks an explanation in the disturbance of heat regulation thus looking for the real cause of fever to the nervous system. He acknowledges that hyperthermia may be produced by various chemical substances when they are generally into the circulation. These reactions in the body of course to be the same as rises of temperature in disease. He states that 'Although even pausing its admission whether fever in itself is useful in summarizing belief is making more and more head for reaching the fever as a curative effort on the part of the physician his connection he refers to experimental phasis is pneumonia diphtheria chicken cholera streptococci pneumococci, and bacterium that febrile conditions increase the bacterium of the blood, hasten the production of the bacteria and my harmful influence the bacteria. To the inherited notions of the past he adds by saying "Here too then expect."

Obstetrics stigation is relentlessly clearing away errors. Practitioners of their age in order to make new paths. Obstetric deavors. In Chief session owes Professor Smith its sincere and rev. bringing before them, at this time a book illustrati real value to all who are seeking to keep abreast of the times in the rapid progress of medical science.

This la in five ye. A Practical Text Book for Students and for the Honors. By EDWIN BRADFORD CRAIG, A.B. This (Hon) M.D., F.R.C.S., Professor Obstetrics to Duke University, College Physicians and Surgeons. New increased. Attending Obstetrician and Gynecologist Sloane into medical for Women assisted by GEORGE H. RYDER the M.D. Instructor Gynecology, College Physicians and Surgeons. New York. Assisting Attending Obstetrician Sloane Hospital for Women. Octavo 858 pages. The 499 engravings and thirteen plates. Lea and Brodman, Philadelphia and New York 1916. Cloth \$2.00 net.

espect this text book of obstetrics the author has placed before the profession the methods employed and the results obtained in one of the largest and most thorough equipped maternity services in the country combined with the ideas and conclusions resulting from the extensive experience in private as well as in hospital practice. The subject is treated in the usual order and the material is presented under the following six headings:

- 1 Anatomy and Embryology
- 2 Physiological Pregnancy and Its Management
- 3 Pathological Pregnancy
- 4 Pathological Labor

## 5 Obstetric Surgery. 6 Pathological Puerperium

The illustrations 499 in number, with 13 plates are very well done and greatly enhance the value of the book. The carefully compiled statistics, covering all of the manifold obstetric conditions are especially to be commended as features of great worth.

The teaching throughout is sound and conservative and the book should prove of great value to the specialist as well as to the general practitioner and the medical student.

W A J

**RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS**  
A Layman's Handbook of Treatment. By LAWYRON BROWN M.D. Second Edition, thoroughly revised 12mo 188 pp. Lea & Febiger Publishers Philadelphia and New York, 1916. Price, \$1.25

The only portion of the book with which the reviewer is not in accord is its title *Rules for Recovery from Tuberculosis*. The book would have gained much if it were entitled *An Intimate Talk About Tuberculosis with Laymen*.

The little treatise of one hundred and seventy odd pages is so full of interesting important and sane advice to all afflicted with tuberculosis on how to live, that one is at a quandary which part of the book to consider the most laudable and best. Dr Lawyron Brown's eminence as an expert in the pathology and treatment of tuberculosis is such that any advice coming from him should and would be listened to with the utmost interest and attention. The book combines the results of his knowledge and experience with a deep sympathy with those afflicted and a clear insight into their wants, needs and foibles.

The advice is given in a plain language, intelligible to the simplest mind and covers topics of every day life. The book discusses the subjects of rest food alcohol and tobacco fresh air the porch sleeping out, exercise temperature body weight, climate, hygienic care of the patient, and a number of other similar interesting topics.

The twenty five chapters are replete with most valuable instruction on pulmonary tuberculosis. In the chapter on Food the author while advising a generous diet gives a timely warning against over feeding and the customary process of 'fattening up'. In the chapter on Climate the author truly remarks that 'it is now clearly recognized that proper treatment is more important than climatic and further, that there is no specific climate. Further on the author states that the benefit derived from climatic health resorts is to be attributed largely to change of environment and in some instances to a more properly regulated life.'

Although the book is primarily written for the layman it would be very advisable for many physicians to read it through from cover to cover. Perhaps such a study would help to eliminate so many unwise statements usually made by some physicians in their talks to patients afflicted with pulmonary tuberculosis.

G M P

**GOOD HEALTH HOW TO GET IT AND HOW TO KEEP IT**  
By ALAN H. DOTY author of "Prevention of Infectious Diseases". The Mosquito A Manual of Instruction in the Principles of Prompt Aid to the Injured etc. Illustrated. D Appleton & Co New York and London 1917. Price, \$1.50

The book is written for the laity. It is quite different from other books on hygiene for instead of advising how to keep 100 per cent physically fit it tells how to get good health and how to keep it.

The book is divided into fifteen chapters and the subjects treated range from the structure of the body personal hygiene to the extermination of flies and mosquitoes etc., etc.

**HANDBOOK OF ANATOMY** Complete Compend of Anatomy, including Anatomy of Viscera, chapter on Dental Anatomy, numerous tables and incorporating the newer nomenclature adopted by the German Anatomical Society, general designated the Basle Nomenclature, or BNA. By JAMES K. YOUNG, M.D., F.A.C.S., Prof Orthopedic Surgery, Philadelphia Polyclinic, Associate Prof Orthopedic Surgery, Univ Pennsylvania, Orthopedic Surgeon, Philadelphia General Hosp. Fifth Edition, revised and enlarged, 154 engravings, some in colors. Philadelphia, F. A. Davis Co., English Depot, Stanley Phillips, London, 1917. Price, \$2.00 net.

The new edition of this well-known handbook of anatomy brings further credit to the author. He has added the Basle nomenclature. The chapter on osteology, which is unusually complete for so small a volume, has been improved by excellent illustrations. The special chapter on Dental Anatomy will find favor with the dental students. This edition contains the excellent original illustrations of the arterial system of the previous one, and also many tables and diagrams of value. The concise chapter on the alimentary apparatus gives some excellent descriptions of the viscera. Especially good is the one of the liver. Of the ductless glands the description of the spleen pleases most. We think, however, the author should mention the important relations in connection with the thyroid body. The chapter on the nervous system gives sixty pages of concrete matter concerning the brain and spinal cord with the cranial and spinal nerves and their distribution. The diagrams and illustrations here are exceptionally good and of much aid to the student. This chapter could be rendered more valuable by expansion. The text devoted to the genito-urinary apparatus abounds with well-arranged facts and the muscles, articulations and organs of special sense are described in the fewest words consistent with the human anatomy, of which this book of Young's is a remarkably complete treatise. We recommend it as an aid to both student and nurses, and the practitioner can profitably read it.

THEODORE L. VOSSELER.

**THE ELEMENTS OF THE SCIENCE OF NUTRITION** By GRAHAM LUSK, Ph.D., Sc.D., F.R.S. (Edin.), Professor of Physiology at Cornell Medical School, New York. Third edition, reset. Octavo of 641 pages illustrated. Philadelphia and London W. B. Saunders Company, 1917. Cloth, \$4.50 net.

Professor Lusk is too well known as a physiologist and teacher to need an introduction. Any one who wishes to learn what is actually known of metabolism and nutrition stripped of all fanciful theories and surmises should study this book. It does not pretend to be a book on physiology, but it discusses the subjects of the effects upon metabolism of starvation, of proteins, fats and carbohydrates, the mechanism of the regulation of the temperature of the body and the influence of mechanical work. The author then takes up the consideration of diet, the nutritive value of foods, food requirement in all ages and conditions. He then takes up the study of metabolism in such diseased conditions as anemia, high altitudes, myxedema, exophthalmic goitre, diabetes, nephritis, acidosis, cardiac diseases, fevers, gout, etc.

The book closes with a very interesting chapter on food economies, followed by a long talk of composition and fuel value of all common foods.

As a book of reference it is enhanced by a very complete index.

Throughout the book the author strives to give only statements that have been proven by experimental data as foot notes, the original references are given. This feature makes the book of great value as a reference

book, and gives it an authoritative value. There is no padding and few statements that are questionable.

The reviewer has no hesitancy in commending this book to both students and practitioners for reliable information on the subjects treated.

E. H. B.

**PRACTICAL MASSAGE AND CORRECTIVE EXERCISES** By HARTVIG NISSEN. Revised and Enlarged Edition of the Author's "Practical Massage in Twenty Lessons," with many additions. Philadelphia F. A. Davis Co., 1916. xii, 211 pages, 6 plates, 8vo. Cloth, \$1.50.

This little manual covers the ground specified quite thoroughly, and is simple, practical, and easily comprehended. It is marred by the author's lack of acquaintance with the English language, and with the theoretical and scientific side of his subject. The photographic illustrations are good, the others are antiquated.

**DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS**, by GEORGE W. NORRIS, M.D., Asst Professor Medicine University of Pennsylvania, and HENRY R. M. LANDIS, M.D., Asst Professor Medicine University of Pennsylvania, with a chapter on the Electrocardiograph in Heart Disease, by EDWARD B. KRUMBHARR, Ph.D., M.D., Asst Professor Research Medicine University of Pennsylvania. Octavo volume. 782 pages, 413 illustrations. Philadelphia and London W. B. Saunders Company, 1917. Cloth, \$7.00 net. Half Morocco, \$8.50 net.

This is a thoroughly practical book. As one studies its pages, he feels as if the heart and lungs were under his very eyes, and ears, and palpating finger tips. There is a firm logical basis laid for the superstructure, for a clear dissertation is given on the subject of diagnostic acoustics. Therefore, with a thorough grounding in the laws of sound production and transmission, the student approaches the subject of percussion and auscultation. Well illustrated is this practical work with photographs of frozen sections from the cadaver, previously hardened in formalin so that the anatomical relations remain as during life.

It would be impossible to review the pages of this great work without reproducing them. There is not an unnecessary statement in them. There is no so-called padding. To the man who will read them his views will be strengthened. To the thorough student of them will come a finishing certainty seldom surpassed in this department.

H. A. FAIRBAIRN

## Deaths

CHARLES S. ALLABEN, M.D., Margaretville, died December 10, 1917.

RICHARD GILES, M.D., Cold Spring, died January 19, 1918.

CHARLES TAYLOR JEWETT, M.D., New York City, died January 18, 1918.

ALBERT KOHN, M.D., New York City, died January 21, 1918.

JACOB MAURITZ MORIN, M.D., Brooklyn, died December, 1917.

ELLIS WADSWORTH STORMS, M.D., Falconer, died January 9, 1918.

EDMUND BURKE THOMPSON, M.D., New York City, died January 22, 1918.

WILLIAM HANNA THOMSON, M.D., New York City, died January 18, 1918.

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M.D. Editor

Business and Editorial Offices: 17 West 43d Street New York U.S.A.  
Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N.Y. U.S.A.

## COMMITTEE ON PUBLICATION

S. W. S. Tom M.D. Chairman, New York Edward L. Hunt M.D. New York John C. MacEvitt M.D. Brooklyn  
M. L. B. T. Ker M.D. Ithaca Frank Van Fleet M.D. New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

MARCH 1918

No 3

## ORIGINAL ARTICLES

### THE DIFFERENTIAL DIAGNOSIS OF ENLARGEMENTS OF THE CERVICAL LYMPH NODES

By ROYAL STORRS HAYNES, M.D.  
NEW YORK CITY

**E**NLARGEMENT of the cervical lymph nodes is among the commonest of the affections of childhood. It is commonly a secondary, it may be a primary affection. We encounter such enlargements in the course of infectious diseases, as a result of local bacterial infections, or as part of a lymphatic overgrowth, benign or malignant.

Enlargement of the cervical lymph nodes may be regarded in general as falling into the classes of (a) inflammations—simple or tuberculous, (b) hyperplasias and (c) neoplasms, bearing in mind that these pathological processes do not adhere with consistency to particular disease entities but that both hyperplasia and inflammatory swelling may result from infection, and that a neoplasm may become the seat of active inflammation.

As types of neoplasms the least common of these classes are lymphadenoma, lymph sarcoma is primary diseases and carcinoma is a secondary process.

Hyperplasias of the lymph nodes occur typically with infectious diseases particularly the exanthemata—scarlet fever, measles, German measles and diphtheria, with syphilis and, more

rarely, generalized tuberculosis in leukemia, in Hodgkin's disease and in the glandular fever of Pfeiffer.

The commonest forms of enlargement of the cervical lymph nodes are the infections, enlargements secondary to bacterial invasion of structures of the head and throat whose lymphatic drainage terminates in one or other of the groups of lymph nodes situated in the superficial and in the deep structures of the neck. It is these enlargements which are of the greatest importance to us from the standpoint of etiology, diagnosis, prognosis and treatment.

In the differential diagnosis of these various enlargements the questions requiring elucidation in chief are

1 *What is the character of the malady?* Is it, for instance, a new growth, the hyperplasia due to German measles or syphilis, or an inflammatory enlargement due to an eczema behind the ear?

2 *If it is due to an infection what is the location of the primary source of infection?* Is it on the scalp, on the gums or in the nasopharynx?

3 *If it is an infection what type of infection is it?* Is it a simple pyogenic affair or tuberculous?

We shall have as aids in arriving at our conclusions

1 The history of the patient his age, his personal and social hygiene his contacts the

characteristics of his food, the presence or absence of symptoms of illness of any kind, the duration of the enlargement under consideration, its rapidity of growth, its progress from one group of lymph nodes to other groups

b The location of the affected nodes

c The condition of the tissues to which the affected lymph nodes are known to correspond

d The size, shape, color, heat, consistency of the enlargement, its relation to the skin and to the surrounding and deeper tissues, the discreteness or conglomeration of the constituent lymph nodes

e The condition of lymphatic tissue in other parts of the body

f General signs of disease elsewhere

g Results of examination of the blood—its cytology, hemoglobin and bacteriology

h The results of serum reactions, the Wassermann and the tuberculosis complement fixation tests

i The results of skin reactions, the von Pirquet and other tuberculin tests, the luetin test and, conceivably, the Schick reaction

j Roentgen ray examination of the head and neck disclosing tooth abscesses or calcareous nodes, or of the thorax disclosing widespread tuberculosis

k The examination of removed tissue in the lymphatic area of the affected nodes, such as adenoids or tonsils

l The examination of pus aspirated from the enlargement mass, and lastly,

m The examination, macroscopic, microscopic and cultural of the enlarged lymph nodes themselves removed at operation

Enlargements of the cervical lymph nodes, other than those due to infections are usually accompanied by signs of disease elsewhere which serve to establish a diagnosis even if the enlargements *per se* could not be differentiated.

The glandular enlargements accompanying the exanthemata are essentially acute and are accompanied by the symptoms and physical signs of the primary disease. Those of scarlet fever are typically of the deep cervical groups, both anterior and posterior as would be expected from the prevalence of irritation of the fauces and naso-pharynx, they may progress to intense infiltration and to suppuration but in the early weeks of the disease are not likely to be mistaken for anything else. The enlargements which occur late in the course of scarlet fever in the same groups apparently without throat involvement may cause confusion if the occurrence of scarlet fever be not known or suspected. The enlarged lymph nodes of diphtheria are likewise acute and overshadowed by the symptoms of the parent disease so that the diagnosis is reasonably certain. In measles, the most important enlargement is one which

occurs days or weeks after the original disease and which has no very evident association with the attack. It may cause confusion and uncertainty even if the occurrence of a previous rubeola be known, because of the well-known tendency to tuberculous infection produced by this disease. The lymph node enlargements in rubella are commonly misunderstood only until the eruption appears or after it has disappeared. Its location and its transient nature serves to identify it. In mumps the swelling of the salivary glands, parotid, submaxillary and submental may be confused with the corresponding groups of superficial lymph nodes. Particularly is there likely to be confusion between submaxillary mumps and enlargement of the submaxillary nodes, the latter are situated above the salivary gland, often on the horizontal ramus of the mandible, in a position to appear like a periosteal abscess when swollen. A bilateral swelling in this locality will serve to establish mumps as the diagnosis. The acute glandular fever of Pfeiffer runs a characteristic course of fever, constitutional symptoms and enlargement, usually bilateral, of the deep cervical lymph nodes. The nodes may become the size of walnuts, but are discrete, hard, very sensitive, do not suppurate, and subside after a week or two. Of local symptoms in the area of lymphatic distribution there are none. "The occurrence of a sudden febrile attack accompanied by an early painful enlargement of the anterior cervical lymph nodes without any inflammatory involvement of the pharynx made the recognition of the disease easy."

The enlargement of the cervical nodes which occurs in syphilis is part of a general adenopathy affecting the liver, spleen, inguinal and epitrochlear nodes. The blood examination may show nothing characteristic in its cytology, but the Wassermann reaction should be positive and the luetin skin reaction. The splenic and epitrochlear enlargements are important confirmatory evidence. So is a history of miscarriages and stillbirths or early deaths. The group involved in the neck will be likely to be the posterior cervical group. The nodes will be discrete, without signs of inflammation and not adherent to adjacent structures, nor will there be any tendency to suppuration. No focus of infection will be apparent. Such nodes if excised may show the *spirochæta pallidæ*.

Hodgkin's disease may present a picture which may be confusing because in Hodgkin's the cervical nodes may be the first to be involved and because it is often accompanied by fever. Here however, the constant progression of enlargement without coalescing and without suppuration the involvement of other

groups of nodes, particularly within the thorax and abdomen, where lymph nodes secondary to infected cervical nodes are not to be expected, the splenic enlargement, the progressive anemia, and the finding of characteristic Hodgkin's hyperplasia on section of a removed gland would serve to establish the positive diagnosis.

Lympho sarcoma may appear like Hodgkin's disease at first and have a similar differentiation but there is a tendency for the capsule of the nodes to rupture, the nodes to become adherent to each other and the surrounding tissues. The course is rapid and the swelling may be very large.

Carcinoma is very rare in childhood.

Acute lymphatic leukemia is the only form of leukemia in which a cervical enlargement may need differentiating. In its early stages it presents enlargement of nodes up to walnut size, discrete, with little or no redness or tenderness. Later when hemorrhagic changes take place, in the mouth and throat infection is often superimposed upon the picture. The diagnosis will be made by the examination of the blood. Anemia with 1,000,000 to 3,000,000 R B C. Hemoglobin of 20 to 30 percent, leucocytes of 50,000 to 150,000 of which 90 to 98 per cent are lymphocytes mostly of the large variety are the expected findings.

In consideration of infections, there is the double problem of what sort of an infection it may be, and whence it has arisen. As Stone has said "The common diagnosis of cervical adenitis without a statement as to the primary source of infection should be regarded as a matter for reproach." This compels a consideration of the various groups of lymph nodes and the distribution of the lymph vessels of the head and neck.

The lymphatics of the head and neck occur in two sets or main groups. One is superficial, draining the entire skin surface and its lymph nodes lie for the most part around the upper part of the neck. The second set lies more deeply along the course of the internal carotid artery and receives the lymphatic drainage from the superficial set of nodes and from the mucous membranes of the upper part of the digestive and the respiratory tracts.

The superficial lymph nodes comprise the following groups: (a) Occipital nodes which receive the drainage from the lymphatics of the skin of the back of the head.

(b) Post-auricular or mastoid nodes which drain the temporal portion of the scalp and the posterior surface of the ear and external auditory meatus.

(c) Anterior or pre-auricular nodes situated immediately in front of the ear and draining the anterior surface of the auricle and meatus.

the skin of the temporal region and the lateral portion of the eyelids.

(d) Parotid nodes which receive drainage from the preceding from the eyelids and nose.

(e) Submaxillary (and facial) nodes lie along the facial artery and on the submaxillary salivary gland. These drain both skin and mucous membrane, receiving lymph vessels from the nose, cheek, upper lip, external portion of lower lip, gums, teeth and lateral portions of the tongue.

(f) Submental nodes which lie underneath the chin and which drain the chin, lower lip, floor of mouth and tip of tongue.

The deep set of cervical lymph nodes forms a chain beneath the sterno cleido-mastoid muscle and along the course of the internal carotid artery. An outlying chain of this group is the retropharyngeal nodes which lie on the buccopharyngeal fascia and receive the lymphatic drainage from the nose and nasopharynx. Drainage from these nodes is to the superior nodes of the deep cervical chain. The deep set of cervical lymph nodes may be subdivided into two sets, a superior, with which we have most to do, and in inferior lying in the supraclavicular triangle. These latter receive the ultimate lymphatic drainage from the head, neck, arm and thoracic wall and their efferents unite to form the jugular trunk which ends at the junction of the internal jugular and subclavian veins. They do not communicate with the intrathoracic nodes except by way of the blood stream. The superior group of deep cervical lymph nodes may be divided again into two sets, an anterior or internal, and a posterior or external. The external set lies under the posterior half of the sterno mastoid and at its posterior border, the internal set lies along or on the internal jugular vein. These are larger than those of the external set and one or two of them are very constant in position. Particularly is this the case with one or two large nodes situated at the upper part of this group. These two sets, internal and external, are united by many anastomotic branches. The external set receive their drainage from the superficial lymph nodes of the posterior part of the head and neck, the internal from the anterior. They both receive direct drainage from the mouth, throat and pharynx.

Infection, then, of the region of the posterior part of the scalp will cause enlargement of the occipital group of glands of the ear, mastoid or scalp about the ear, in the pre or post-auricular nodes, of the face above the ala of the nose in the pre auricular or parotid glands, of the nose upper lip lower lip, side of tongue in the facial or submaxillary group, of the lower lip and chin, in the sub-

mental group Infection of the gums and periosteum may cause enlargement of either the submaxillary group or the superior lymph node of the anterior group of the deep chain Infection of the nose or naso-pharynx will cause enlargement, first, of the retropharyngeal lymph nodes and then of the posterior group of the deep set lying under the posterior border of the sterno-mastoid, or of the latter in the first instance Infection of the tonsil will cause enlargement first of one particular node, called earliest, I believe, by Dr George Bacon Wood, the tonsillar node This node is larger than its fellows and very constantly is found at the junction of the anterior border of the sterno-mastoid with the posterior belly of the digastric muscle It receives directly the lymphatic drainage from the tonsil and may be considered to have established a good title to its name

Enlargement of the occipital, mastoid, preauricular and parotid nodes may be due to a tuberculous infection, such as lupus, but much more probably is due to a pyogenic infection such as results from eczema, pediculosis, furunculosis, fissures and cracks about the nostrils, or corner of the mouth Enlargement of the submental nodes will in all probability be due to pyogenic infection of the teeth and gums, as is also the case with the submaxillary group Carious teeth, *per se*, seem not to cause enlargement of the lymph nodes It is only when the gums become eroded, or the bone about the roots becomes infected that lymphatic involvement is noted In the case of the retropharyngeal, and the deep cervical nodes both internal and external, the presumption as to type of infectious process is much more in favor of tuberculosis The faucial tonsil, the faucial lymphatic tissue, and the pharyngeal tonsil which drain into these are all liable to tuberculous infection and are brought into contact with tubercle bacillus both in the respired air and in the food The latter method of infection, it may be mentioned, is particularly active in childhood as is evidenced by the occurrence of the bovine tubercle bacillus in 62 per cent of cases of tuberculous adenitis under five years of age

Given, therefore, an enlargement of the lymph nodes of the neck, the location of the lymph node group first enlarged will give valuable information as to the localization of the primary focus and some information as to the type of infection Later, no such definiteness can be claimed for the anastomosis between deep and superficial groups and between both sets of the deep group are so abundant that a widespread enlargement may be due to a small focus

Differentiation between simple and tuberculous infections is sometimes very easy and often very difficult In the history of the patient age is a

factor An adenitis in a child under two years is likely to be a simple rather than a tuberculous affair, over two years to be tuberculous rather than simple Yet here an experience of the occurrence of widespread tuberculous lymph nodes in fairly early infancy in peculiarly susceptible infants will make one lean to the graver alternative whenever the question of diagnosis arises The factor of diet will be of value oftenest when the diet is known to have been free from the reproach of tuberculosis If no raw milk, or milk from tuberculous cows has been given to a child the point is of value, if the diet is known to have contained contaminated food the fact will not be of great value until the tuberculous character of the enlargement has been at least suspected from other diagnostic aids Then it undoubtedly will weigh heavily for tuberculous involvement Similarly with his personal and social hygiene, and his contact with tuberculous individuals A negative history of contact is of more value than a positive The onset of the swelling is important, tuberculous adenitis may be, but rarely is, acute in its onset An onset, therefore, with considerable abruptness, with fever, rapid swelling of the lymph nodes, tenderness, edema, and matting together speak for pyogenic infection A slow increase of the swelling, with gradual involvement of more than one node, with delayed cellular tissue infiltration, involvement and delayed amalgamation of skin and deeper structures speak for tuberculosis Yet in the tuberculous cervical adenitis of early infancy just such a picture at onset as that described for acute pyogenic infection is likely to occur, and its recognition taxes the skill and experience of the physician The duration of the enlargement is important Enlargement of cervical lymph nodes of over three months duration are presumptively tuberculous They may not be Mild infections secondary to infections of the nose and throat may occur and persist without the nodes being tuberculous Here recurrent mild infections from adenoids occur, each attack leaving the lymph nodes with an increment of enlargement which does not allow of their resuming again their original size The location of the nodes may be the same in both varieties of infection But a single, slowly enlarging lymph node, particularly if it be the tonsillar node points to tuberculosis Simple adenitis will usually present in a relatively early stage, enlargement of several nodes Tuberculosis may exceptionally, usually it is the later stages of this type where many nodes are involved When many are involved they may extend down and occupy the whole inferior deep cervical group Involvement of the submaxillary or the external group of deep cervical nodes will more commonly point to simple infection as the portal of entry in children is more often the

tonsil than the adenoid or the gums or skin, the tonsil is excellently situated to receive the bovine tubercle bacillus—noted already as the prevalent form under five years—in milk or other food.

When an enlargement is due to pyogenic infection, there is likelihood of evidence in mouth, throat, or naso-pharynx of inflammation of the structures in these localities. The absence of such in the presence of cervical swelling is significant of tuberculosis. Of course the presence of definitely tuberculous lesions in these regions makes tuberculous adenitis almost certain.

In the early stages the character of the swelling itself may be identical in both types. In fact, less importance should be placed upon the character of the swelling than upon the history, course and various examinations. Usually with pyogenic infections, the swelling is larger, comprises more lymph nodes, has more perinodular swelling, is tender, reddened, hot and elastic, all the tissues being bound up in the swelling. In the later stages of tuberculous enlargement there may be just as many glands enlarged, there may be matting together and adhesions to the skin and deeper parts, but only exceptionally will there be much tenderness, redness or heat. Elasticity, if it occur will be in portions of the mass and due to local exertion. The skin may be discolored. Softening if it occurs, will point and discharge and subside if the process is pyogenic, while sinuses will persist if it be tuberculous.

Examination of the blood should show a polynucleosis in the pyogenic, and a lymphocytosis in the tuberculous enlargements, but of course the latter type may not be pure and secondary invaders lighting up an infectious process of a pyogenic nature on top of the tuberculosis will give a leukocytosis with polymorphonuclear increase in this type also. The anemia of the tuberculous variety will probably be the more profound.

The tuberculosis complement fixation test should be positive in the tuberculous enlargement and negative in simple adenitis. It may nevertheless be positive in a simple adenitis when there are foci of tuberculosis elsewhere. The von Pirquet reaction if negative is very valuable evidence of pyogenic infection. It is also of considerable value when positive in children under five years. It may be said with truth that under five years the coincidence of a lymph node enlargement and a positive von Pirquet reaction is very good evidence that the enlargement is tuberculous in nature. Some evidence seems also to be obtained from the intensity of the von Pirquet experience seems to show that in such an instance a very marked reaction portends a more than usually active tuberculous process or more than usually susceptible child. With the less frequently done eye and skin reactions of

Calmette and Moro much the same may be said.

Roentgen ray examination of the head, if it disclose tooth abscesses for instance, will be of help in placing the stump of a pyogenic infection on our questionable enlargement, if it disclose, as it may, calcareous deposits within the area of the cervical enlargement it will point toward tuberculosis. Examination of the thorax showing extensive tuberculous involvement would offer corroboration that a similar condition was present in the cervical glands lymph nodes.

The evidence obtained from the examination of excised adenoids and tonsils may very often be inconclusive. Tuberculosis of a tonsil may not be evident without prolonged examination of many serial sections. The tuberculous focus may be very minute and it is possible that tubercle bacilli may pass through a tonsil or adenoid and not leave local lesions. Of course if found, tuberculosis of tonsil or adenoid stumps the lymph node enlargement.

Tubercle bacilli may be obtained from aspiration of softened areas of the enlargement mass, or pyogenic organisms, or the pus may be sterile—an indication that the process is tuberculous. Softening, however, is a condition that we must all feel ashamed to have supervene in cases of cervical adenitis which are under our care.

With all these diagnostic factors considered, it may yet be difficult to reach a positive conclusion in these cases. As Hale White has said, "you cannot make a positive diagnosis as to whether enlarged glands are tubercular or not until the gland itself has been examined," and so excision may be necessary to put the capstone on our differential diagnosis.

## THE NOSE AND THROAT IN CERVICAL ADENITIS\*

By GEORGE BACON WOOD, M.D.

PHILADELPHIA PA.

THE etiologic importance of the throat nose and mouth to cervical adenopathy lies in the fact, that in these structures minor pathologic lesions may produce open gateways for infection to gain entrance into the lymph channels and also that these lesions are frequently so hidden as to make their detection extremely difficult if not impossible. It is true that adenitis frequently follows lesions of the scalp, the external ear the auditory canals and less frequently of the face but in these cases the source of the infection is usually very apparent and involves primarily the superficial glands. Statistics or other absolute data concerning the relative importance of the nose throat and mouth

\*Read at the Annual Meeting of the Medical Society of the State of New York at Utica, April 25, 1917.

as the starting place for cervical adenitis are unavailable, but I believe that about 90 per cent of the cases of cervical adenopathy, if not more, have their original focal infections within these organs. As between the different portions of the nose, throat and mouth I would place the faucial tonsils first in importance, next the pharyngeal tonsil and other lymphatic structures of the pharynx, including the lingual tonsil, then the gums and alveolar processes and lastly the nasal cavities and accessory sinuses. Gardiner (*Lancet*, 1915, p. 752) places responsibility on the faucial tonsils at 80 per cent of chronic cases. In all these structures the point of infection may be more or less hidden. Lesions of other portions of the mucous membrane may occasionally give rise to adenitis just as do lesions of the external skin but they are uncommon and do not present anything peculiar or obscure.

The reason for believing in the vulnerability of the tonsillar tissues of the throat are scientific and are based upon experimental facts and clinical evidence. The faucial tonsil is of primary importance chiefly because of its size and because of the depth of its crypt. Further, the faucial tonsil is subject to a continuous contamination from the rich bacterial flora of the mouth, while the pharyngeal tonsil under normal conditions is comparatively free from bacteria.

The normal surface epithelium both of the skin and mucous membrane offers an efficient barrier against the invasion of bacteria and it requires an absolute break through its entire depth before the lymphatics can be reached. Unfortunately this mechanical defence is not afforded by the epithelium lining the crypts of the tonsils. The peculiar disintegration of the basal cells of the cryptal epithelium and their lack of cohesiveness makes necessary only a slight abrasion of the superficial cells before the parenchyma of the tonsil itself is open to external influences. Further, it has been shown experimentally that certain pathogenic microorganisms can pass through an apparently normal cryptal epithelium.

In a series of experiments on hogs I found that the tubercle bacillus when placed on the surface of the tonsil would pass through it and could be regained from the regionary lymph nodes before any pathologic condition in the tonsil could be detected, even by microscopic examination. In making the inoculations a bouillon culture of tubercle bacilli was swabbed over the surface of the tonsil and it was of course, impossible to avoid contamination of other portions of the buccal and pharyngeal mucosa, yet in not a single instance did any lesion of the mucous membrane develop, except in the tonsil. Further, the tubercle itself almost invariably began not on or even near the surface of the tonsil but deep in the parenchyma close to the

bottom of the crypts. The susceptibility of the tonsil of the hog to tuberculosis has also been demonstrated by Ravenal. In almost all the hogs used in his feeding experiments, in which the tubercle bacilli were mixed with the food, tonsillar tuberculosis developed.

In another series of experiments in which the anthrax bacillus was used, I was able to trace the invasion more exactly. Briefly stated, it was found that the anthrax bacillus would not invade the normal mucous membrane of the mouth or throat, while on the contrary the tonsils were readily infected. Further, the invasion began near the bottom of the crypt and the anthrax bacilli could actually be seen penetrating through the normal cryptal epithelium.

The susceptibility of the tonsils to tuberculosis is further substantiated by the pathologic findings in human tonsils. In a series of 1,759 cases reported by twenty-six different observers and over fifty examined by myself, tuberculosis was found in about 5 per cent. These tonsils were procured by operation from children without selection so that this 5 per cent would approximate the frequency of primary tonsillar tuberculosis in children. In 136 cases of pulmonary tuberculosis reported by seven different observers the tonsils were found involved 94 times, that is, 69 per cent. In 1904 I reported nine cases of pulmonary tuberculosis in which the tonsils were examined at autopsy and in every one there were found histologic changes sufficient to justify a diagnosis of tuberculosis. Again in 1908, I reported 34 cases of pulmonary tuberculosis the tonsils of which showed tuberculosis in 29 while in two of the remaining there were doubtful lesions. Practically almost every case of fatal pulmonary tuberculosis will sooner or later develop lesions in the faucial tonsils. No other portion of the buccal, nasal or pharyngeal mucosa, nor in fact any other part of the body except regionary lymph nodes, will begin to show anything like this very high rate of secondary involvement.

A study of the method of invasion by bacteria of the tonsil parenchyma in ordinary cases of acute tonsillitis shows the vulnerability of the cryptal epithelium. During health the resistance offered by the surface cells is great enough to hold off the numerous bacteria of the crypts, but given a sufficient pathogenicity of the cryptal bacteria to produce a necrosis of these cells, the parenchyma of the tonsil is immediately opened to the bacterial invasion. The bacteria gaining access to the parenchyma invade the interfollicular tissue and accumulate in the germinating follicles where they set up suppurative processes. The rapid involvement of the regionary lymph nodes of the tonsil show that a certain number of invading germs escape through the efferent lymphatics. But as in the case of the lymphatic nodes

so in the tonsils a rapid increase in the number of endothelial cells, which are actively phagocytic, tends to arrest the progress of the invasion. If it were not for this active tissue resistance to infectious agents, which the tonsils possess, this organ would soon succumb to the repeated assaults from the oral bacteria.

Further, it is probable that the large majority of apparently normal tonsils, if examined carefully throughout their whole extent, will show some isolated areas of inflammation or other pathological lesion.

Willis (*Southern Medical Journal* Sept. 1914, Vol. 7, p. 146) makes a brief report of his findings after microscopical and macroscopical examination of 213 tonsils removed from 108 cases. Cryptal concretions were present in 154, so-called abscesses in 30, pericryptal inflammation in 165, while distinct evidence of tuberculosis was found in 5 per cent. It is interesting to note that in all these cases of tuberculosis except one there was a cervical adenitis on the same side.

What has just been said concerning the faucial tonsil as to its susceptibility to bacterial invasion may be said also, though to a lesser degree, of the pharyngeal tonsil and other lymphatic tissues of the throat and it must not for a minute be supposed that the removal of the faucial tonsils even complete enucleation, guarantees against infections of the cervical lymph nodes. It is only because of their size, the depth of their crypts and the possibility that in them may be harbored bacteria of all kinds that we must accord to the faucial tonsils the most importance in the etiology of infections of the cervical lymph nodes.

While ulcerative conditions of the gums frequently lead to acute inflammatory involvement of the cervical lymph nodes it is probable that very few of the chronic cases of cervical adenitis originate from this source. Tuberculosis, especially primary tuberculosis of the alveoli is not a common finding as compared with the frequency of this disease in the cervical lymphatics, and hidden or latent tuberculous lesions in any part of the teeth or their alveolar processes are almost unknown.

The importance of the nose and the accessory sinuses in the causation of acute or chronic adenitis is at present uncertain. It is probable that they are very seldom concerned, especially with the more chronic types. I have seen one case of parotid abscess following accessory sinus disease but in this I believe that the infection followed from a fistula in the eyelid. It is possible for infectious conditions in the lower part of the scalp or upper part of the face to produce suppurative conditions of the parotid gland as the lymphatics from this region drain to lymph nodes either outside or within the capsule of the parotid.

Right here it may be well to recall the work of Schoeman, Lenhart and lately Henke. Henke (*Archiv f. Laryngologie und Rhinologie*, 1914 heft 2, p. 231) represents the work of all these men when he claims that there is some relation between the lymphatics of the nose and the tonsils. He injected sterile emulsions of soot into the various parts of the nasal fossae and later removed the tonsils and found that in twenty-four hours after the injections, both the faucial and pharyngeal tonsils showed the presence of pigment. He deduced that there was a direct lymphatic tract which drained from the nasal fossae into the tonsils and that tonsillitis following nasal operations, especially those on the septum, was due to this lymphatic connection. Henke further claims that there was also a direct lymphatic connection between the gums and the tonsils.

If we believe the deductions set forth by Henke we must admit that all our anatomical knowledge has been at fault. However, in the light of more recent work, it seems that not only his deductions are questionable but the facts as he states them are very doubtful.

Carl Amersbach (*Archiv f. Laryngologie und Rhinologie*, 1914 heft 1, p. 59) stimulated by Henke's work published the result of his own experiments which were carried out in the same manner as Henke outlined except that he was more careful in his method of injection. The injections were made in such a way as to prevent any excess of material from gaining access to the surface of the mucous membrane, thus making it impossible for a surface inoculation of the tonsil to take place. He found that when the injections were made in any portion of the mucosa except directly into the tonsil the carbon particles were never found in any portion of the tonsil. According to Amersbach in his animal experiments the carbon particles were carried from the nose by the already established lymphatic route and deposited in the submaxillary gland where a priori, they should go.

As we must recognize that there are certain groups of glands which are more frequently involved, especially in the chronic types of cervical adenopathy, than are other groups, it may help in our determination of the importance of the nose and throat as the etiologic factor in the production of adenitis of the neck to briefly recall some of the anatomical features of the different groups of the glands of the neck and especially their regionary drainage.

The cervical glands of the neck are divided into two main groups the superficial or collecting glands and the deep or terminal glands. The superficial glands are arranged into a sort of collar around the upper part of the neck with a few irregular extensions. This superficial or

pericervical glandular circle is composed of the following subgroups

First, the sub-occipital glands usually found close to the occipital insertion of the complexus muscle immediately external to the external border of the trapezius. These glands receive their afferent lymphatics from the occipital portion of the hairy scalp.

Second, the mastoid glands generally found on the mastoid insertion of the sterno-mastoid muscle. Their afferents come from the temporal portion of the hairy scalp, from the internal surface of the auricle, with the exception of the lobule, and from the posterior surface of the external auditory meatus.

Third, the parotid glands which consist of two groups, the subcutaneous glands and those which are found beneath the capsule or in the actual substance of the parotid. These glands receive their afferent lymphatics from the external surface of the auricle, from the external auditory meatus, from the tympanum, and from the skin of the temple and frontal region, the eyelids and the roof of the nose. Sometimes they also receive vessels from the mucous membrane of the nasal fossæ and from the posterior part of the alveolar border of the superior maxilla. Another subgroup of the parotid glands are placed between the parotid and the pharynx, with their afferent vessels coming from the nasal fossæ, the naso-pharynx and the eustachian tube. Suppurative conditions of these glands is the causative factor in lateral pharyngeal abscess.

Fourth, the submaxillary glands are found just beneath the inferior border of the lower jaw, from the insertion of the anterior belly of the digastric to the angle of the maxilla. Their afferents come from the nose, the cheek, the upper lip and the external part of the lower lip, from almost the whole of the gums and the anterior third of the lateral border of the tongue. It is interesting to note that the lymphatics from the gums collect together in one large trunk which at the level of the last molar sinks into the cheek and ends in the hindermost of the submaxillary groups. Hence, in infections arising from ulcerative conditions around the teeth we would expect involvement of that particular gland which is found just beneath and anterior to the angle of the lower jaw. However, in the case of the upper jaw some of the lymphatics may possibly join with the collectors from the hard palate and pass to the tonsillar lymph node. Some of the afferent vessels of the submaxillary glands coming from the face frequently traverse a series of inconstant groups of small glands which are called the facial glands.

Fifth, the submental glands found in the triangle bounded by the anterior belly of the two

digastric muscles and the hyoid bone. Their afferent vessels come from the skin of the chin, central portion of the lower lip, from the alveolar border of the mandible, from the floor of the mouth and finally from the tip of the tongue. These glands may be infected from ulcerative conditions of the gums of the front lower teeth.

Sixth, the retropharyngeal glands which are found behind the pharynx at the apex of the lateral masses of the atlas. These glands may receive as afferents almost all of the collectors coming from the nasal fossæ and naso-pharynx, the eustachian tube and perhaps some of the lymphatics from the cavity of the tympanum. Suppuration of these glands causes retropharyngeal abscess. The infrequency of the involvement of the retropharyngeal nodes in cases of sinus disease or other conditions within the nose is evidence that chronic adenitis seldom results from infection within the nasal cavities or accessory sinuses. Retropharyngeal abscess is most frequently found in children and the infection almost invariably comes from the pharyngeal tonsil.

The most important glands of the neck, as far as chronic adenopathy is concerned, are the terminal or deep glands which form a perpendicular chain beneath the sterno-mastoid muscle. Into this deep chain empty all the efferent collectors of the more superficial glands. As we descend down the neck we find that these glands empty into each other terminating usually in a single large trunk called the jugular lymph trunk. These substerno-mastoid glands constitute in appearance a continuous chain, but for convenience sake they may be divided into an internal and external group. The external glands are placed posteriorly, resting on the insertions of the splenius, the levator anguli scapulæ and the scalen muscles and are covered for the greater part by the sterno-mastoid muscle. The internal group, sometimes called the internal jugular chain, rest either directly on the internal jugular vein or are immediately adjacent to its external border.

The substerno-mastoid chain comprises usually from fifteen to thirty nodes, although these figures do not represent the extremes of variation. They extend from just beneath the ear downward, sometimes only as far as the point where the omo-hyoid muscle crosses the vessels and nerves, but occasionally reaching as far as the junction of the internal jugular and subclavian veins. Although these internal glands vary in size and number there are one or two large glands which are fairly constant in their position. Thus one or two large glands are constantly found immediately beneath the posterior belly of the digastric, above the spot where the thyro-lingual-facial trunk opens into the internal jugular vein,

also there is almost always a large gland above the point where the omohyoid crosses the internal jugular. There are a few real accessory chains to the deep cervical gland, such as the external jugular chain, found along the course of the external jugular vein, the superficial anterior cervical chain, the anterior deep cervical chain and the recurrent chain, and occasionally one or two glands are found internal to the large blood vessels.

In determining the relative importance of the various portions of the head and neck as the probable area of focal infection in cervical adenopathy, it is exceedingly important to remember the regional drainage of these deep glands. The external or posterior group receive lymphatics from the posterior portion of the head, but according to Poirier no lymphatics come directly to them from the nasal fosse, throat tongue or tonsils. This, however, is not according to my own experience. By injections, according to Gerota's method, of the naso-pharynx and especially the pharyngeal tonsil, I found that the fluid passed invariably to the glands of the external group and I was able to trace the lymphatic vessel in its entire course from the pharyngeal tonsil into these glands. This fact is further substantiated by clinical experience. When there is an infection coming from the nasal fosse or from the naso-pharynx we almost always find the resulting adenopathy beginning under the posterior border of the sterno-mastoid muscle. In contradistinction to this, infections of the tonsils are followed by enlargement of that lymph node readily palpable and behind the angle of the jaw, at the level of the posterior belly of the digastric and just in front of the anterior edge of the sterno-mastoid muscle. This particular lymph node has been called the main node of the deep cervical chain, but because of its frequent enlargement from the tonsillar infection I adopted the term of tonsillar lymph node. It must however be remembered that this lymph node also receives many other lymph vessels, such as the posterior marginal collectors of the tongue the descending trunks from the upper surface of the soft palate from the mucous membrane around the region of the tonsil and the surrounding structures.

The majority of cases of chronic cervical adenopathy are of the descending type. They usually begin with enlargement of the tonsillar lymph node. The next most important group has its starting point in the upper glands of the external group of the deep cervical chain placed just behind the posterior border of the sterno-mastoid. The chronic form of adenitis rarely begins with primary enlargement of the superficial chain. Practically the only direct afferent vessels running to the deep cervical chain come from some part of the upper digestive and res-

piratory apparatus, hence the importance of the mouth, nose and throat in the etiology of cervical adenopathy.

In closing I want to call your attention to just a few points which may help in our etiologic diagnosis. First, that if the glands involved begin with those under the posterior portion of the sterno-mastoid muscle we can rule out the tonsils and mouth and I believe that in the large majority of these cases the infection comes through the pharyngeal tonsil. Second, alveolar infections involve primarily the posterior gland of the submaxillary group and that where the tonsillar lymph node is primarily enlarged the infection almost surely comes through the faucial or lingual tonsils or possibly the lateral folds of the pharynx.

## ROENTGENTHERAPY IN CERVICAL ADENITIS \*

By GEORGE E. PFAHLER M.D.,  
PHILADELPHIA PA.

THE great frequency of cervical adenitis demands that more attention be given to this subject than has been done during the past few years. Collard<sup>1</sup> in an examination of 2,506 persons between the ages of seven and twenty-four years found that 94 per cent of those between seven and twelve years had enlarged cervical nodes.

Laser<sup>2</sup> examined 1,216 school children, 1,079 or 89 per cent of whom had enlarged cervical nodes. In the report of the division of Child Hygiene of the Boston Board of Health for 1911 and 1912 a physical examination of 118,781 school children revealed 13,711 cases of enlarged cervical glands. It is generally admitted that in the great majority of instances the source of infection is in the tonsils. In some cases, however it comes from infection of the pharynx or of the teeth. A portion of these cases are infected by the tubercle bacillus and others by pyogenic organisms. Mitchell<sup>3</sup> found that of the tuberculous species 88 per cent were infected by the bovine tubercle bacillus and 12 per cent by the human bacillus. It is probably the lymph nodes infected by pyogenic organisms that disappear rather easily by various forms of treatment or from no treatment at all.

*Source of Infection*—Sutcliffe<sup>4</sup> says, "The greater number of the cases occurring in childhood follow tonsillar and pharyngeal disturbances and though it is doubtful if more than a small proportion of these are primarily tuberculous it is quite certain that the enlarged gland which follows an attack of tonsillitis furnishes a very suitable soil for the propagation of tuberculosis unless the child is removed to health."

surroundings, and the possibility of further infection diminished by the removal of the tonsils and the clearing of the pharynx, they will soon be typically tuberculous

Trautman<sup>5</sup> is convinced that the cervical lymph nodes are infected through the medium of the tonsils in many cases, and is certain that the tonsils on the affected side at least should be removed as the first step in treatment. In one of the cases he reports the tonsils were apparently sound, but tuberculous lesions were found in them resembling those in the tuberculous lymph nodes in the neck on the same side.

Tybus<sup>6</sup> says, "The site of an infected focus can be determined from the particular group of lymph nodes enlarged. The pharynx and nasopharynx are the commonest source from which the tubercle bacillus gains entrance. The tonsils are frequently tuberculous. A tuberculous tonsil may be enlarged, more commonly it is small and hidden and very liable to be overlooked. Enucleation of the tonsils is essential when this is the infected focus." He also says the supply of tubercle bacillus comes from tuberculous cow's milk.

Boggs<sup>7</sup> takes a different view with regard to the treatment and says, "It has been noted that tuberculous glands in many children whose tonsils were enlarged were improved after Roentgen radiation to such an extent that it was not necessary to remove the tonsils." He says that in many instances their removal actually aggravated the tuberculous adenitis. He also believes it is probable, when the removal of the tonsils causes the disappearances of glandular involvement, they are of the inflammatory type instead of the tuberculous.

Muller<sup>8</sup> says, "The faucial tonsils are generally considered the most frequent portals of entry. Following in order are the pharyngeal tonsils or adenoids, middle ear disease, lesions of the buccal and nasal mucous membrane, and various miscellaneous causes such as cracks, fissure, skin disease, etc. The consumption of tuberculous butter or milk, the childish habit of sucking the fingers, or pencils and other objects picked up from the floor, and the influence of flies which deposit bacilli on the food, etc., especially in the household where other members of the family have or have had tuberculosis, or even if some tuberculous person has previously lived in the house, all favor disposition of the organisms at the portal of entry.

Gardner<sup>9</sup> claims that in the majority of cases (80 per cent) of chronic cervical adenitis in cases in which no direct source of infection is present the tonsils are infected. The size of tonsils makes no difference as to their infectivity except that the small fibrotic variety is likely to be more dangerous than the large. The number of cases in which tubercle bacilli are present is relatively

small, but it is larger than in simple cases of enlarged tonsils. The frequent presence of other organisms and the tubercle bacilli in these cases suggests that a large proportion of the so-called chronic tuberculous glands are in reality chronic septic glands. The organisms are present in the deepest parts of the glands, and are, therefore, only removed by operation involving complete enucleation.

*General Plan of Treatment*—The fact that many methods of treatment are advocated for this affection is the best proof that none is entirely satisfactory. In this disease as in all others the regular practitioner should be broad enough to study each patient thoroughly and then advise treatment, accordingly making use of every possible means that will be beneficial. Therefore, when a child presents itself for treatment one should first search for the source of infection and make a careful examination of the tonsils, lymphatics and the teeth. If there is suspicion of disease in the tonsils I believe that they should be removed. If the teeth are diseased they should receive treatment accordingly.

Second—If the glands are soft, fluctuating or tender, at least the affected soft gland should be incised and drained. Third—If the glands are not soft, and the case is of recent origin or less than six months, I believe that in the majority of instances these glands can be made to disappear under the influence of the Roentgen rays, when properly administered.

Generally this Roentgen treatment requires months and if the child must be brought from a distance and the treatment involves too much effort and expense so as to make it impractical, I believe the child should have the glands dissected out carefully and thoroughly by a competent surgeon. Unless this dissection is thoroughly done there will be recurrence, that is other infected glands will become enlarged following the operation. There is frequently brought to my attention patients that have been operated upon and within a few weeks after the operation, there is more disease present than at the beginning of the operation. This becomes discouraging to patients, and therefore, unless a surgeon feels thoroughly competent to make a clean and complete dissection of all of these glands, he had better leave the case alone and refer it for X-ray treatment. Muller says, "I am almost tempted to say that with modern technique recurrence is impossible—we have simply failed to entirely remove the infected nodes."

Stone<sup>10</sup> believes that the recurrence after radical excision is due to the failure to recognize and remove the primary focus of infection or the vulnerable points of entrance. Muller's argument is good and he is very competent to express an opinion, but there are frequently

brought to me patients suffering from recurrent nodules following operation by men whose standing should be above criticism. This leads me to the next recommendation.

Fourth—Whenever a child is operated upon for cervical adenitis, the operation should be followed by at least one or two full courses of post-operative treatment. This procedure will make many operations a success which would otherwise be a failure.

Fifth—If a gland is tender at the beginning of X-ray treatment it will almost certainly become softened, red on the surface and finally show signs of pointing. When this occurs it should be incised and treated as an abscess, continuing the X-ray treatment. In such instances a complete dissection of the glands of the neck will not be necessary, and as a result there will be a small and barely visible scar at the point of incision, instead of a great thick and disfiguring scar on the neck such as we commonly see.

Sixth—The hygiene conditions under which the patient is living should be improved so far as possible and especially the source of infection should be removed that is, if the source of infection is in the milk pure milk should be secured. If the house or family is infected the child should be removed from such associated tuberculous infection if practicable.

Seventh—Good food, fresh air, tonic treatment and all conditions which will improve the general health will be beneficial.

*Roentgentherapy*—Hundreds of cases have been treated by this method. Holding<sup>11</sup> says that the literature contains over 1,500 cases successfully treated by this method. As early as 1905 Bullett<sup>1</sup> had collected reports in 226 cases of tuberculous adenitis treated by X-ray. 35 per cent were cured, 40 per cent improved, 25 per cent unimproved.

In 1907 Von Mutschendacher T V<sup>12</sup> published his results in a series of 1,344 cases of tuberculous adenitis treated by X-rays of which number he found it necessary to operate in only 9 per cent.

In 1913, Blusch B<sup>14</sup> reported 50 cases treated by X-rays in which 50 per cent were cured, and the same year Fritsch<sup>15</sup> reported 33 cases treated by the same means in which it was necessary to operate in only 4 per cent.

In 1915 Krael<sup>16</sup> reported 36 cases of tuberculous adenitis treated by X-rays in his clinic during the last two years, and stated that since Roentgen treatment had been substituted for surgical procedures no radical extirpation of glands had been necessary the surgical measures being limited to punctures when abscesses formed. The cosmetic results were better and there were fewer recurrences under X-ray treat-

ment than there had been previously under surgical treatment.

Philpowicz<sup>17</sup> says that in his experience in 25 cases the Roentgen ray was found the most effective of all measures in the treatment of tuberculous lymph nodes. These lymph nodes subside in size under the exposure. The sinuses heal with a flexible soft scar and the whole organism seems to be benefited by the treatment, while there are absolutely no objections or inconveniences as a result of the treatment. According to him the lymph nodes responded alike whether they were still hard or had already softened.

Albert Weil<sup>18</sup> declares that there are no tuberculous adenopathies which are not suitable for Roentgen ray treatment. In his experience with 50 cases he has had no failures. He uses large doses, but fractions them and divides the skin over the region into as many areas as necessary to expose the whole of the gland, giving a total of from ten to fourteen H units at each portal of entry, filtered through four millimeters of aluminum. This usually takes five or six days. He clears out the fistula and suppurating glands first, but the merely inflamed gland without suppuration will not require this.

Boggs is equally enthusiastic, and says, "Formerly tuberculous adenitis was referred for Roentgen treatments because of the unsightly scars left by operations but today the cases are referred on account of the frequent recurrence following operation." He further states that when the Roentgen rays are employed early, suppuration seldom occurs. This treatment avoids sinuses and the formation of disfiguring scars.

Johnston<sup>19</sup> says, "It required just as much skill and experience to successfully treat tubercular infections of the deep cervical glands and lymphatics by radiotherapy as it does to make a clean and complete dissection of this same structure. He mentions the following advantages of the treatment: 1st It is free from pain, and relieves pain if present. 2d It does not necessitate confinement in bed or in the hospital. 3d It has no death rate and at the hands of a competent man it is practically void of danger. 4th The cosmetic results are excellent. It produces no scars and reduces any that may be present. 5th Its results are equally prominent to those following operations. Liability to recurrence is less and recurrences if they do occur respond promptly to radiation."

He says "The disadvantages are: 1st It is tedious. 2d It is expensive. 3d It requires the services of an expert operator."

Pancorst<sup>6</sup> says "The X-ray is a valuable adjunct to surgery simplifies operations preventing recurrences promoting healing and greatly improving the cosmetic results." In the application

of the X-ray Pancoast arranges the cases in three distinct groups

First—Cases in which the enlargement has not reached the operative period. In the large percentage of such cases it is possible to check the progress of the disease, by systematic and careful X-ray treatment combined with the effects of constitutional measures, but it is not always possible to promote a complete absorption of some of the larger glands even though the disease process is checked, because of the inability to remove the second degree of hyperplasia

Second—As the post-operative treatment in cases which the glands have not begun to undergo caseation where operation has been limited to the removal of the large nodes. Post-operative treatment may prevent the disease in the small ones

Third—As the post-operative treatment in cases in which caseation or suppuration has begun, especially in cases where the sinuses have been formed

*Technique of Roentgentherapy in Cervical Adenitis*—In general, the technique of deep Roentgentherapy should be applied in this disease. Therefore, it is my technique at present to employ hard rays thoroughly filtered, that is, I make use of rays from a tube which will back up a nine-inch parallel spark gap, which is equivalent to approximately nine on the Benoist scale. These rays are filtered through six millimeters of aluminum. I apply these rays for forty milliamperes minutes through each portal of entry. The hair and face must be thoroughly protected by sheets of lead. The focal distance from the target to the skin is eight inches

The number of portals of entry will vary somewhat with the individual case. In general, however, two portals of entry for one side of the neck will be sufficient. In very severe cases or when the glands are very large it may be necessary to divide the portals of entry on one side of the neck or on each side of the neck into four or more. I generally draw lines downward along the anterior border of the sterno-cleido-mastoid muscles and then direct rays anteriorly through the neck, and then posterior to this line toward the deeper portion of these glands. This treatment is not repeated again for a month, at which time one will find usually a very decided reduction in the size of the glands, and in not repeating inside of a month one avoids cumulative effects and a dermatitis

A dermatitis should always be avoided, especially in the treatment of this disease, even a redness of the skin should be avoided. I recognize that this was not the teaching a number of years ago, and it was common for us to look for

and expect a redness of the skin following our treatment. We were led into this error by the fact that unless we gave sufficient treatment to produce redness of the skin we were giving insufficient treatment to affect the deeper glands, but with our modern technique and greater filtration we can produce most decided effects on the deepest glands without giving enough radiation to effect the skin. If a severe dermatitis is produced, there is always the danger of a subsequent development of a telangiectasis. This telangiectasis is most objectionable, but most of us have seen this condition in our own practice and as a result of the practice of others. This telangiectasis is more objectionable than the scar of an operation, but with modern technique it can be avoided. Therefore, I would like to emphasize the fact that if Roentgentherapy is to be employed in these cases it should not be done by an orderly or a nurse, but by a skilled Roentgenologist who realizes the importance of carefully measuring his doses, of giving sufficient treatment to produce results, and yet not enough treatment to damage the skin, who knows and will take all the precautions that are necessary. I believe that it requires an equal amount of skill on the part of the Roentgenologist in the treatment of this disease that is required by the surgeon in a careful dissection, and just as there are many surgeons incapable of a careful dissection of the glands from the neck, so there are many men using the Roentgen rays today who do not have the skill required for this treatment. You as surgeons will surely recognize the importance of skillful surgery in the treatment of this disease. You should be equally careful in recognizing the importance of skillful Roentgenological technique

There are today scattered over the country thousands of X-ray machines of all types and descriptions. Some good and some bad, but worst of all they are being employed by a lot of incompetent men, men who may be competent in other lines of medicine, but who are wholly incompetent in Roentgenology, and while they may be able to make satisfactory plates of some of the extremities for fractures, they should not undertake the treatment of conditions with such a force as the Roentgen rays without careful study and a reasonable amount of experience. I have long felt that in addition to a higher medical education needed by physicians a higher moral sense is even of more importance, for it is more often, I believe, lack of moral sense that leads men to undertake work that they must realize themselves incompetent for, than a mere lack of knowledge of their incompetency

#### CONCLUSION

First—Cervical adenitis is a frequent disease and deserves more serious consideration

Second—Each case should be studied as an

individual, and every means employed that will produce beneficial results

Third—The Roentgen rays can be expected to relieve completely the early cases

Fourth—Softened glands should be opened and drained as abscesses

Fifth—Patients who have been operated upon should receive post-operative treatment to prevent recurrences

Sixth—These cases require skillful technique whether it be surgical or Roentgenological

#### REFERENCES

- 1 Collard *Zeitschr f Klin Med*, 1892 Vol XXXI p 50 and *Munch Med Woch* 1904, Vol LI p 87
- 2 Lasek *Deutsche Med Woch* 1890 Vol XXII p 500
- 3 Mitchell *Edinburgh Medical Journal* September 1914 Vol XIII No 3
- 4 Sutcliffe *The Practitioner* London Vol CLXXVIII pp 625-760
- 5 Trautmann *Munch Med Woch*, April 1913 Vol LX, No 16
- 6 Tybus *Clinical Journal*, London August 20 1913, Vol XLII No 20
- 7 Boggs *New York Medical Journal* May 27 1916
- 8 Muller *Annals of Surgery* October 1913
- 9 Gardiner *The Lancet*, London, Vol II p 480s
- 10 Stone *Boston Med and Surg Jour* 1912 Vol CLXVII p 537
- 11 Holding *Medical Records* March 11 1916
- 12 Bullett *Trans Am Roentgen Ray Society* 1905, p 26
- 13 Von Mutschendacher *Beitrage z klin Chir* 1912 Vol LXXX, *Zentralbl f d ges Chir*, 1913 Vol XXV p 1
- 14 Blaisch *Ergebn der Chir und Orthop* 1913 Vol VII p 111
- 15 Frisch *Munch Med Wochenschr* Vol LX No 47 1913
- 16 Krecke *4 Beitrage z klin Chir*, Bd 95 Tubingen 1915 p 609
- 17 Philipowicz *Wiener klinische Wochenschrift* Vienna December 18 1914
- 18 Albert Weil *Paris Medical* September 23 1915 Vol VI No 39, p 260
- 19 Johnston *Proceedings of the Medical Society of the State of Penna* September 11 13, 1916
- 20 Phicoast *Penna Medical Journal*, February, 1909

### CERVICAL LYMPH ADENITIS DUE TO INFECTIONS ARISING IN AND ABOUT THE TEETH\*

By THOMAS B HARTZELL, M.D.,  
MINNEAPOLIS MINN

IT has been a well-recognized fact that adenitis is a more or less constant concomitant of infections of any sort. Tuberculous lymph adenitis has long been recognized, and it is now the practice of our surgeons to remove tuberculous lymph nodes. The tubercle bacillus, however, is not a constant mouth inhabitant though it is occasionally found about the human teeth. Therefore, we may dismiss the question of tuberculous lymph adenitis with the state-

ment that in the last five years, I have not seen a single case of lupus or tuberculous inflammation of oral surfaces of dental origin.

Two other diseases, which record their presence by cervical lymph adenitis, are syphilis and carcinoma. Syphilitic lymph adenitis is comparatively common, but does not, as a rule, occur as a result of infection in or about the teeth. Rather, does it occur as a result of infection of the mucous membranes and is not dependent on the micro-organism growing upon the tooth surfaces. It has been my observation, however, that the carcinomatous lymph adenitis of the cervical and sublingual glands frequently have their origin about the human teeth. I have studied twenty cases in the last five years in which carcinoma had its primary site in the gingivae of human teeth. In these cases, three of which I have seen within the last four months, the primary lesion was in direct contact with dirty, loose, infected teeth. In these three cases the disease had extended to the lymphatics of the floor of the mouth and nodes of the neck. These patients were men. One is now dead and two are dying, each having presented himself too late to make operative procedure valuable.

In view of the fact that we have not definitely determined what the etiological factor in carcinoma is, we are thrown back on one course only, and that is early recognition and complete removal before the growth has time to extend by metastasis into the lymphatic channels. The facts regarding tuberculous, syphilitic, and carcinomatous lymphatic invasion are well known to the medical profession, and the research, in which we have been interested within the last five years has not thrown any additional light on these types of infection. Nevertheless, we have some relatively new and definite knowledge regarding the lymph adenitis of the mouth and cervical region. To lay this information before you, it is necessary for me to make a brief review of what we now believe regarding mouth infections.

First, we think it reasonable and logical to regard mouth infections as a result of the organisms or organisms which are habitually found in the mouth, which have the power to invade the tissues, excluding all those occasional and transient organisms not constantly present in the mouth though frequently observed there, and which rarely have been found to invade the tissues. This reduces our field of intensive study to a comparatively small number. The following from a paper just prepared for the National Dental Association by Henrici and Hartzell embodies our present belief regarding the etiology of the common mouth infections.

"The organisms which we believe deserve consideration in this study are the fusiform bacilli, the mouth spirochete, the leptothrix buccalis

\*Read at the Annual Meeting of the Medical Society of the State of New York at Utica April 25 1917.

the endamoeba buccalis, the mouth staphylococci, and the streptococci. Of these, we hope to show that the last group alone, the streptococci, are the primary cause of the various dental infections: caries, pulpitis, alveolar abscess, and pyorrhea.

The fusiform bacilli are generally associated with spirochæte and are found in the healthy mouth in relatively small numbers, in the gingival crevices and interproximal spaces, and in the tonsillar crypts. They have been found in large numbers in certain types of ulcerative stomatitis, particularly gingivitis, and in the characteristic form of ulcerative tonsillitis mentioned above. They form a large part of the mixed flora of noma. Their growth in the tissues is superficial, resembling the diphtheria bacillus in this. They have no demonstrable toxin that may be absorbed and destroy tissues, and are invariably associated with cocci and spirochæte. They occur in tissues rendered gangrenous by interference with the circulation, as frostbite, mercurial stomatitis, and syphilis. Metastatic invasions of fusiform bacilli are rare. There are only six recorded cases, and direct inoculation of the bacilli into laboratory animals failed to produce infection. We have not been able to demonstrate their presence in diseased tissues from pyorrhea pockets.

The spirochæte of the mouth are of three well-recognized types. Noguchi has named them *treponema macrodentium*, *treponema microdentium*, and *treponema mucosum*, none of which forms inoculated into animals produce infection. We, therefore, regard the spirochæte as non-pathogenic.

The leptothrix forms are found in intertwining masses on tooth surfaces, and invade the area of dead dentine in caries. They are usually also found in the gingival crevice and in pyorrhea pus. They multiply most rapidly in the white material on the surfaces of teeth, and their tendency is to form adherent masses. While the leptothrix forms have been found in some cases of endocarditis, in rat-bite fever, and in the urine in certain cases of kidney disease, identity of these organisms with the thread-bacteria of the mouth has not been established. They have been grown in pure culture by Kligler, who reports no animal experiments. Wherry and Oliver also claim to have cultivated this organism, but report no animal inoculations. Up to the present time, leptothrix buccalis has not been proven to have pathogenic properties.

The endamoeba buccalis, though widely heralded by Barrett and Smith as a cause of pyorrhea and also positively claimed by Bass and Johns to be the cause of pyorrhea, are regarded non-pathogenic by Hartzell and Henrici, Williams, Von Sholly, Rosenberg, Craig, Sanford, and Hecker. In fact, there is no trustworthy

evidence that the mouth amoeba are capable of producing disease. This brings us to a consideration of the staphylococcus.

The staphylococci of the mouth were first studied by Biondi, later by Black, Miller, Netter, and others. Goadby cultivated the aureus eighty times from one thousand mouths, but found the white staphylococci quite frequently. Kligler studied twenty-nine strains of staphylococci, and found but two of the yellow variety. Of the twenty-seven white strains, twenty-one failed to liquefy gelatine. In general, our own observations confirm those of Goadby and Kligler that the staphylococcus aureus is rare in the mouth, and is to be considered accidental. The variety most commonly found is the non-liquefying white staphylococcus, generally considered non-pathogenic.

The question of the pathogenicity of mouth staphylococci deserves further study. We find them most frequently in the suppurative processes of pyorrhea, and chronic and acute alveolar abscesses. When they are pathogenic, they are pus producers. We regard them as one of the active factors in the acute alveolar abscess, but regard them as unimportant in the chronic alveolar abscess. We do not regard the staphylococcus as a factor of much importance in cervical lymph adenitis.

The organism, which is absolutely constant in the mouth, making its appearance between the sixth and tenth hour after the birth of a child, is the streptococcus salivarius, after which time it is a constant inhabitant of all mouths. Kligler has shown that it forms 44 per cent of the bacterial mass in the normal mouth, and though he found in the dirty mouth the percentage of streptococci was less than in the normal mouth, nevertheless, the total number of streptococci in the dirty mouth is enormously increased.

An enormous amount of work has been done on the streptococcus. Our own intensive study of the streptococcus commenced in 1913 at which times we attempted to ascertain the relationship between the chronic arthritides and organisms found in the chronic dental granuloma.

Our method of obtaining the contents of chronic granulomata was as follows:

We scrubbed the tooth surface with alcohol and iodine, anointing the gums with iodine and excluding moisture by the plentiful use of sterile gauze placed about the tooth root to be investigated. Then, we passed a white hot cautery around the cervical margin of the gum to destroy the bacterial growth in the gingival crevice. Extraction followed immediately and the roots of these abscessed teeth were clipped off and dropped into sterile media.

The bacteriological study of the growth produced by the material thus obtained has been intensively followed by Henrici for the past four

years, and his experiments and animal inoculations have shown that the contents of the chronic granuloma is, in the majority of cases, streptococcus viridans. The staphylococcus is found only occasionally in the chronic granuloma though it exists in great numbers with the streptococcus in the acute dental abscess. The result of our work has shown that streptococcus viridans has the power of penetrating the tissue and of causing metastatic lesions in all parts of the body, including brain, spinal cord, muscles, kidney, heart, blood vessels, and lymphatics in rabbits. Unquestionably, it produces a toxin, and is in our opinion the organism, par excellence, responsible for most of the important dental lesions, including inflammation of the dental pulp. Certainly, it is the chief causative factor in the destruction of the tissues contiguous to the teeth, commonly called pyorrhea. We have noted that it creates a non suppurative lesion in the beginning, which lesion may become suppurative as the destruction of the periodontal tissues proceed. The suppurative character of the pyorrhea process, however, is grafted upon the initial lesion produced by the streptococcus and is secondary to the streptococcal invasion.

This organism can and does invade the lymphatics and I have observed numerous instances of swollen lymph nodes in direct continuity with the lymphatic drainage from the gums and periodontal tissues, which have rapidly receded as a result of stamping out the growth of this organism in the tissues contiguous to the teeth, commonly called pyorrhea. In fact such experiences are daily occurrences. We have noted that it creates a non suppurative lesion in the beginning, which lesion may become suppurative as the destruction of the periodontal tissues proceed. The suppurative character of the pyorrhea process, however, is grafted upon the initial lesion produced by the streptococcus and is secondary to the streptococcal invasion.

The chronic dental abscess or so called granuloma, which occurs about the root ends of pulpless teeth, are more important than the pyorrhea pocket as a focus of infection to the lymphatics and blood stream. The reason for this fact is that the chronic granuloma is confined in the body of the jaws directly at the end of the roots of the teeth, which, during the process of mastication, are subject to great stress which stress cruses them to be depressed in their sockets. It should be remembered that the tooth attachment being elastic, permits rebound after the exertion of force on the grinding surface so that during mastication there is a constant depression of the teeth into the tissues and rebound out of the tissues with every movement of the jaws. This slight but powerful movement tends to compress the granulosomatous matter at the root end and forces it out into the cir-

culation. For this reason, a thorough examination of the jaws by X-ray becomes especially valuable, in that it reveals the presence of granulosomatous areas in the jaw as well as the pyorrhea pockets.

The streptococcus salivarius is an organism of low virulence, and its lesion resembles in its cellular character the lesion of treponema pallidum its chief characteristic being an outpour of lymphocytes and plasma cells. Though the beginning of lymphatic drainage and its direct continuity from the gingival margin into the lymph nodes of the sublingual and cervical region have not been demonstrated by anatomical preparations, the certainty that bacteria do directly invade the lymphatics and the venous circulation originating about the teeth, can be shown by microscopic sections of the human jaw cut transversely through tooth structure, gingival crevice, alveolar process, and overlying soft tissues. (See Figures I, II, III)

Figure I is a section showing the normal gingival crevice and its surrounding tissues. I wish to lay special stress on the fact that the bottom of the gingival crevice is very poorly protected by epithelium, offering ready ingress to bacteria, growing on the tooth surfaces, into the tissues surrounding the teeth.

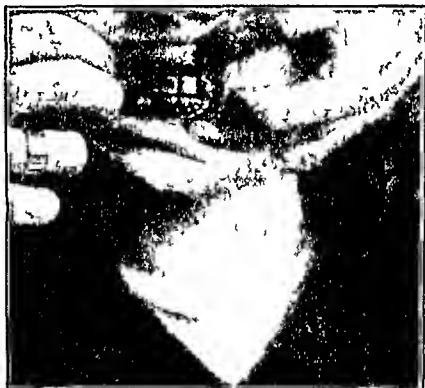


FIG. 1.—Showing masses of stained bacteria on the surfaces of teeth

Figure II shows a cross section of the human jaw cut through tooth structure, pyorrhea pocket, alveolar process and investing tissue. The microscopic field, however, shows only the gingival crevice. I would like to draw particular attention to the fact that the blood vessels are clearly shown and that the arterial capillaries are discharging blood into the gingival crevice. While the veins do not stand out

clearly, it must be assumed that the venus return flow from this area leads back into the general circulation, and that the lymphatics of this neighborhood are also open to receive infectious material from this pyorrhea pocket. In this

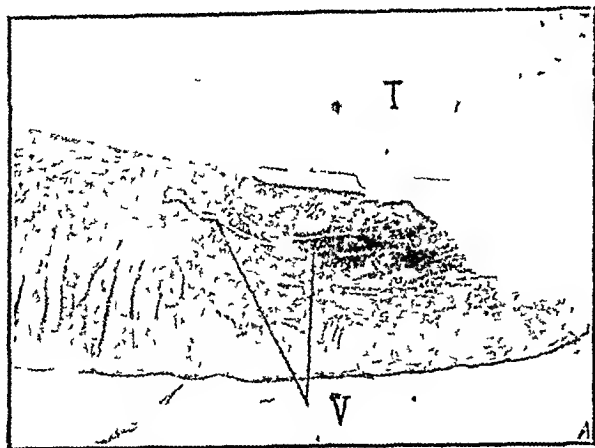


FIG 2—Showing human pyorrhea pocket. Note the great mass of plasma cells on the ulcerating surface of the pocket and the open vessels indicated by the lines.

connection, note figure three, which shows the bacterial masses on human teeth. These bacterial masses are not evident to the eye under ordinary conditions, but are brought into view by the use of disclosing stain applied to the dental surfaces, which at once brings into view the translucent mass of bacteria nearest the gingival crevice on the teeth in this mouth. Kligler in a recent article in the *Journal of the Allied Societies* describes an ingenious method by which he demonstrated that the bacterial masses on the teeth of a normal mouth run from six to eight million organisms to the milligramme of tooth scrapings. He further has shown, by laboratory methods, that of the total mass of bacteria growing on teeth in the normal mouth, 60 per cent are cocci, and that of these 60 per cent, 44 per cent are streptococci. Our own observations confirm Kligler's work. It is not surprising then that lesions in a gum margin slightly open and ready to receive bacteria from the tooth neck receive infinite numbers of streptococci.

Slide IV is a microscopis section of a human lymph node obtained from hospital case No 6736. Patient died of a streptococcus infection of the tissues of the neck. The infection beginning in the tissues contiguous to the teeth and the inflammation progressing by direct extension resulted in a large doughy swelling of the tissues in this neighborhood. No other source of infection was demonstrated either before or after death. The post-mortem confirmed the diagnosis made before death. The character of the infection was demonstrated by cultures cul-

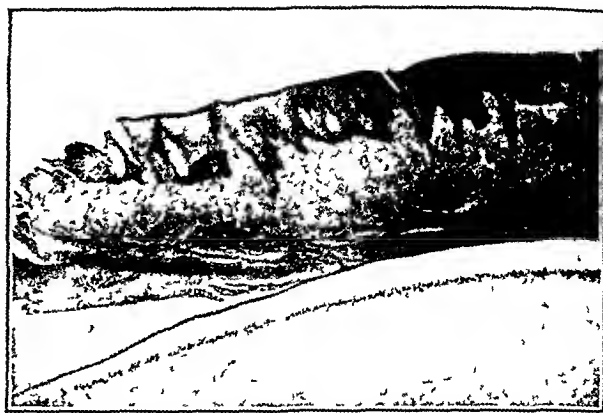


FIG 3—Normal human gum, showing bottom of a crevice poorly protected by epithelium.

tivated by Doctor Johnson, pathologist of the University Hospital, and the section here shown is part of the post-mortem record. In this section is observed a characteristic streptococcal lesion in which we have numerous lymph cells, plasma cells, and endothelial tissue, with no proliferation of connective tissue, such as we see in Hodgkin's disease.

For purposes of comparison, section five was obtained from a case of Hodgkin's disease, and in it we note an increased amount of connective tissue, and instead of lymphocytes, the inflammatory mass exhibits a preponderance of eosinophile cells.

Section six shows an experimental lymph node infection in a rabbit made by inoculating a rabbit with cultures of streptococcus viridans obtained from the mouth. The streptococcus viridans lesion is characteristic in that no matter whether it occurs in a gum margin, a lymph node, a heart muscle, or kidney, the mass of inflammatory tissue has always the same cellular characteristics, namely, a great preponderance of lymphocytes and plasma cells.

From a clinical standpoint, the invasion of the cervical lymphatics by streptococcus viridans presents a fairly constant picture of low-grade infection as follows: swelling of the lymph nodes, very slight tenderness to pressure, with or without temperature dependent upon the degree of invasion, and, when temperature is present, its range is from one-half to a degree. On account of this narrow range of temperature, streptococcus viridans lymph adenitis is often mistaken for incipient tuberculosis.

The following case record well illustrates this fact. The patient, a young woman, thirty years of age, married, and mother of one child, exhibited low fever, absent in the mornings but noted in the afternoons—slight but progressive loss in weight and energy, and complained of constant feeling of weariness. The lymph nodes of her neck were slightly enlarged. With the exception of failure to react to the tuberculin

\* Slides IV, V and VI are lumer autochrome pictures and could not be reproduced except at great expense.

test, a typical picture of beginning tuberculosis. The patient's husband, a physician, sought the counsel of fellow internists, and the case was thoroughly studied during the period of a month. The daily slight range in temperature was observed and loss of weight continued. No cough was present. In fact, no involvement of pulmonary tissue could be demonstrated. An X-ray examination of the mouth revealed a few deep pyorrhea pockets and a half a dozen abscessed teeth. The tissues of the mouth contiguous to these abscessed teeth shows no external signs of inflammation, but on the contrary presented rather an anaemic appearance. The abscessed teeth were removed, one at a time permitting an interval of five days to elapse between treatments. One especially large abscess containing a mass of granulomatous tissue more than a cubic centimeter in bulk was found in the lower jaw. The diseased tooth was extracted, and the granulomatous tissue carefully curetted out. Following this curettement, there was a slight rise in temperature, which subsided in a few hours. No heart or joint involvement was observed. Slow but careful eradication of the various foci of infection was carried out. The patient's temperature became normal, though making no gain in weight for the first few weeks, after which time she gained twenty pounds within six months.

Case three, that of a nurse in the University Hospital, who exhibited a constant loss in weight for several months, becoming anaemic and having subnormal temperature in the morning with a temperature from a half to a degree in the afternoons. The loss in weight and energy together with swollen lymphatics of the neck seemed to indicate a possible tuberculosis, and it was determined that this patient should give up her hospital work and seek outdoor life. However, before leaving the hospital, the patient on her own volition asked for an X-ray examination of the teeth and jaws.

On X-ray examination, she was found to have almost no pyorrhea but three or four dead teeth exhibited granulomatous areas around their root ends. These teeth subsequently were removed and the granulomatous material carefully curetted out. Because of this patient's loss of weight and energy, she gave up her hospital work and returned to her home. I received a communication from her recently saying that she had regained her normal weight and strength and that the fear of tuberculosis had completely left her.

Perhaps there is no class of patients in which a careful examination of the mouth and jaws is of greater value than that of children. The following example illustrates that fact.

A child, nine years of age, exhibited a slight fever, anemia, and swelling of the sublingual

lymph nodes, both anterior and posterior cervical, the swollen nodes being tender to pressure. The child was under size and under weight. A careful examination of the jaws revealed abscesses on the right lower deciduous molars. The removal of the dead pulps from these molars and the curettement of the abscesses was followed by recession of the swollen lymphatics, increase in weight and vigor. At the present time, the child who is now eleven years old is up to normal weight for his age and has had no recurrence of infection of the cervical lymphatics.

In cases of this type extraction of the deciduous teeth is a safer plan than attempted sterilization. The damage wrought to the enamel organ of the second teeth is more objectionable than the loss of the deciduous teeth.

Case number five, that of a dentist forty years old, who had had one previous illness, pneumonia, from which he made a successful recovery. At the time of his lymphatic involvement, the patient was in bed the fourth week with a frank typhoid fever, having passed the crisis. Was convalescent with a normal temperature and was being permitted to sit up in bed, and seemed to be rapidly gaining in strength, when he developed an infection of the cul-de-sac distal of a left lower third molar. Third molars invariably have a very deep gingival crevice which is frequently the site of prolific streptococcal growth. This third molar became very sore and swollen, and from this site, the infection extended to the left tonsil, sublingual glands and cervical glands. The resultant lymphatic infection delayed the progress of the convalescence and resulted in an extra month in bed.

Sublingual gland infections from pyorrhea pockets and deep gingival crevices are exceedingly common, and frequently pass unrecognized. This is a very great mistake, because the great majority of metastatic infections of heart, kidney, and joint might be prevented if patients were taught to attach importance to cervical gland enlargements and reported such conditions thereby enabling physicians to take measures to eradicate the foci of infection causing them. The early recognition of glandular infection with removal of the primary focus, therefore, becomes of utmost importance. The report of the United States Government from the registration areas of vital statistics show that during the year of 1916, there were 105,202 deaths from heart disease among the 65,000,000 people living in those areas in which vital statistics were obtainable, and 98,000 deaths from tuberculosis. Therefore, we see heart disease is a greater menace to life than tuberculosis. Heart disease is 90 per cent streptococcal in its origin and to a large degree preventable, because its chief

ports of entry are the tooth and tonsil paths, both of which may be blocked by proper operative interference. In the case of teeth, the prophylactic measures that preserve them from decay become of great importance. They effectually close the door to streptococcal invasion of their tissues and also of the tissues that surround them. Therefore, careful examination of the teeth and their investing tissues as a matter of routine places in the hands of the physician and dentist the means of preventing to a great degree the more common forms of streptococcal lesions, of which rheumatism, with its concomitant heart, eye and kidney lesions, is the chief.

The streptococcus salivarius makes its appearance in the human mouth about the sixth hour of life, and is a true parasite. It has the power to invade the tissues. It is the chief and most important etiological factor in pyorrhea pulpitis and tooth decay.

The streptococcus salivarius is of low virulence, the evidence of which is that it calls out chiefly lymphocytes and plasma cells in both human and experimental lesions.

When the lymph nodes indicate infection through increase in size and tenderness to pressure, and the investing tissues of the teeth show evidence of inflammatory change, or if infection of the alveolar abscess around the root ends of teeth is present, operative interference is indicated. Just here, both the medical and dental profession should have a word of caution.

Operative interference when undertaken, if for instance it is the extraction of teeth, should be undertaken at intervals of five to seven days. The reason for this statement is that the author has seen in the last two years, four deaths occur as the result of wholesale extraction of teeth. The reason for these deaths lay in the fact that the circulation had reached a point of saturation with the toxins of the infecting agent. The granulating walls around the areas of inflammation were broken down and the patient was overwhelmed by a mass of living organisms and their toxins suddenly thrown into the circulation by the too great amount of surgery undertaken at one time. In view of the fact that the organism is of low virulence, we have the opportunity to produce an exceedingly beneficial effect by extracting abscessed teeth or by apicectomy, if such surgery is undertaken with caution and at suitable intervals. A double benefit is derived by eliminating a small area of infection, and at the same time vaccinating the patient with a great many organisms unavoidably introduced into the tissues, which have exactly the opposite effect when introduced in masses, than when introduced continuously, for when the organisms themselves enter the circulation continuously, they slowly and steadily

break down the patient's immunity, but on the contrary, when the same organisms are introduced in masses, they call forth the patient's resistance, and thus build up immunity. Therefore, the slow surgical treatment of lesions of the teeth and their investing tissues can be made, when proper judgment is exercised, the means of starting many lymphatic and chronic joint infections toward repair, if the surgery is done at proper intervals. By proper intervals, I mean a sufficient length of time to elapse for the patient to overcome the massive dose of bacteria unavoidably given by curetting an abscess or treating a pyorrhea pocket. The intervals found most satisfactory to elapse between such surgical treatment varies from five to seven days, according to the resistance of the patient.

Everything that I have stated in regard to dental abscesses is equally true of the treatment of teeth suffering pyorrhœal inflammation. Here, too, the operator has the opportunity to build up the patient's resistance and to leave him at the end of treatment vastly improved or cured. Whereas, if the operator would suddenly break up the granulating wall in a whole denture, which in some instances would amount to as much as seven square inches of granulating surface, he can confidently expect to produce anaphylaxis instead of immunity, thereby leaving his patient in an infinitely worse condition than when he commenced.

If we learn to heed the danger signal afforded by the swollen lymph node and eliminate the dental abscess or the pyorrhea pocket, we have placed in our hands, through the treatment as outlined above, the power to prevent many cases of heart disease and to cure many cases of chronic arthritis deformans.

#### REFERENCES

- Andrewes and Horder *Lancet*, 1906, 2, p 708
- Barrett and Smith *Dental Cosmos*, August, 1914, December, 1914, *Jour Amer Med Assn*, 63, 1746
- Bass and Johns *Jour Amer Med Assn*, 64, 553
- Biondi *Zeitschrift für Hygiene und Infektionskrankheiten*, 2, 194
- Craig *Journal of Infectious Diseases*, 18, 220
- Goadby *The Mycology of the Mouth*, London, Longmans, Green & Co., 1903
- Hartzell and Henrici *Jour of the National Dental Association*, 1, p 48, 2, p 122
- Khgler *Journal of the Allied Dental Societies*, 10, 282
- Larson and Barron *Journal of Infectious Diseases*, 13, 429
- Mayrhofer *Klinisch-bakteriologische Untersuchungen zur Pathologie und Therapie der faulen Zahnpulpa* Jena, 1909, 1910 *Wiener Klinische Wochenschrift*, 21, 615
- Miller *Micro-organisms of the Human Mouth*, 1890
- Moody *Journal of Infectious Diseases*, 19, 511

- Netter *Revue d'Hygiene* 1889 No 6  
Noguchi *Cultural Studies on Mouth Spirochaete, Journal of Experimental Medicine* 15 81  
Noguchi and Chira *Cultivation of Trichomonas of the Human Mouth, Journal of Experimental Medicine* 25 341  
Rosenow *Transmutations in the Streptococcus Pneumococcus Group Journal of Infectious Diseases* 14 16 *Elective Localization of Streptococci Jour Amer Med Assn* 67 1687 *Elective Localization of the Streptococcus from a Case of Pulpitis Dental Neuritis and Myositis Journal of Immunology* 1 363  
Rosenow and Tunnichiffe *Journal of Infectious Diseases* 10 1  
Ulrich *Jour Amer Med Assn* 65 1619 *Dental Review* December 1914  
Wherry *Lancet Clinic* (Cincinnati), 115 295  
Wherry and Oliver *Journal of Infectious Diseases* 19 299  
Black *Independent Practitioner* August 1887 (Quoted by Miller)  
Madame Brailovsky Lounkevitch in a paper entitled *Contribution à l'étude de la Flor. Microbienne Habituelle de la Bouche Normale* *Annales de l'Institut Pasteur* August 1915 XXX p 379

## INDICATIONS FOR REMOVAL OF ENLARGED CERVICAL LYMPH NODES\*

By CHARLES N DOWD, M.D.,  
NEW YORK CITY

**Y**OUR Chairman has asked me to discuss the indications for the removal of enlarged cervical lymph nodes

These indications hinge on the diagnosis of tuberculosis for tuberculous infection here gives the main indication for surgery. Hodgkin's disease and lympho-sarcoma occasionally call for surgical interference, but for them, massive lymphatic enlargement usually gives manifest indication. Hyperplastic inflammation seldom calls for surgery.

If a prompt diagnosis can be made in the tuberculous cases, nearly all of them are curable by operation. The main difficulty is to distinguish tuberculous enlargement from simple hyperplastic enlargement. Some clinicians believe that nearly all enlarged lymph nodes are tuberculous; others, however, particularly those who have excised and examined these nodes find that only a moderate proportion of them really show tuberculosis.

Certain guides for diagnosis may be stated. Childhood, the period of greatest lymphatic reactivity is naturally the time when both forms usually begin. Neck tuberculosis however is not often found in children under two years of age but these little children frequently have the pyogenic infection which leads to abscess formation there.

The abscesses, however, are acute and large. They make enormous swellings in the neck and bear little resemblance to the slowly progressing local cold abscesses which come from tuberculosis.

Progressive tuberculosis of the cervical lymph nodes manifests itself in two main forms. (1) In about 80 per cent of the cases caseation and abscess formation result. When this stage is reached the diagnosis is usually very simple, for the primary enlargement is usually just below the angle of the jaw and the cold abscess is located there or in a locality which pus from that source can reach. Before the abscess is formed, the enlarged lymph node just below the angle of the jaw has a characteristic appearance. It is usually much larger than the surrounding nodes, is fairly soft and is more or less attached under the anterior border of the sternomastoid muscle. Branchial cysts are sometimes confounded with enlarged lymph nodes or with cold abscesses in this locality but they should be removed surgically, hence a differential diagnosis is not essential. Occasionally the primary lymphatic infection is submaxillary or submental. The enlarged nodes, or abscesses then push down the submaxillary salivary gland, or are situated just back of it or are beneath the anterior bellies of the digastric muscles.

(2) In the remaining 20 per cent the lymph nodes enlarge without abscess formation and may extend throughout the neck from the mastoid to the clavicle and from the internal jugular vein backward under the trapezius and forward under the jaws. They are rather hard, matted together and not easily movable. They do not show as good a tendency to local limitation as do the caseating variety. Their tendency is to progress intermittently and patients who have enlarged upper cervical nodes of this variety in childhood may have them matted throughout the neck in adolescence or in early adult life.

Hyperplastic nodes show a tendency to subside. The inflammation tends to be retrogressive rather than progressive. There may be periods when it is difficult to distinguish them from tuberculosis but in those instances a little delay will usually clear the diagnosis.

If these factors are duly considered, the clinical differential diagnosis between tuberculosis and hyperplastic cervical lymph nodes can be made in almost all cases.

**Tabulation of clinical material**—A recommendation for the removal of enlarged cervical lymph nodes should be accompanied by a statement of the experience which leads to that recommendation.

I have records of 726 cases which have been operated upon by myself, or my associates, or assistants under my personal observation. Last

\*Read at the Annual Meeting of the Medical Society of the State of New York at Utica April 25 1917

summed a report upon 687 of these cases was made before the American Medical Association, and since the later work has not materially changed the nature of the results, the following table is taken from that report. The patients were divided into groups according to the severity of the disease.

Fol- lowed	Into 6-20 yr	Into 20-30 yr	Into 30-40 yr	Into 40-50 yr	Into 50-60 yr	Into 60-70 yr	Into 70-80 yr	Into 80-90 yr	Not traced	Died
Group	yr	yr	yr	yr	yr	yr	yr	yr		
I	67	23	36	53	61	65	49	98		
II	29	11	18	14	24	19	10	57	3	
III	13	3	5	2	5	9	6	6	1	
Total	109	37	59	69	90	93	65	161	4	

Group	Apparently cured	Recurrences or slight evi- dence of re- currence	Died of in- tercurrent disease	Died in hospi- tal
I	91%	875%	025%	
II	682%	238%	55%	24%
III	34%	432%	204%	2%

Had had one or more secondary operations during period of observation

Group I—8 per cent

Group II—28.5 per cent

It is thus seen that the earlier cases give wonderfully good results, and childhood is particularly the time for these favorable cases. If neglected they are capable of developing into the undesirable cases which are tabulated in Groups II and III.

### THREE CONSIDERATIONS WHICH BEAR STRONGLY UPON THE REAL SURGICAL PROBLEM

It is very important that there should be more adequate general understanding of the real surgical problem. There are, at least, three very practical considerations which bear on the subject and which have prevented many physicians from knowing just what surgery can do. They are:

1. Uncertainties in diagnosis
2. Technicalities in operation
3. Recurrences in late and unfavorable cases

The uncertainties in diagnosis cause two types of errors. (a) When tuberculosis is present and is not recognized, the patients drift past the most favorable period for successful treatment. They are finally brought to the surgeon with extensive infiltrating masses of glands, and their best opportunity is gone.

(b) On the other hand, when simple hyperplastic glands are wrongly believed to be tuberculous, the particular form of treatment which

was used for them is supposed to cure tuberculosis. Thus unfortunate confusion results. This confusion can be diminished by attention to the details given by Dr. Haynes, and also mentioned at the beginning of this paper.

*Technicalities of Operation*—The details of the operation involves many technicalities. The lymph nodes lie close to the important vessels and nerves and are hidden by muscles and fascia and, in certain instances, by salivary glands or even by bone. Patience and familiarity with these details are important, otherwise only part of the tuberculous nodes are removed. Growth continues in those which remain, and discredit is cast upon the operation. The simple incising of an abscess without discovering and removing the nodes which lie back of it is particularly unfortunate, it is very common, but should not be called an operation. The term "operation" should be reserved for the removal of the infected lymph nodes as well as the tubercular detritus which comes from them. This can be done with reasonable regularity if one will become familiar with details which have been published in many places. When, however, the incisions are so placed that a thorough removal is impossible, and when unnecessary paralyses are produced, one must feel that the technicalities have been neglected. I have recently seen a patient with the scar so placed that the lower branch of the facial nerve must have been cut, yet surgeon stated that he had looked for it and couldn't find it. As a matter of fact, he probably never will see it in an operation. I never have. Yet there are certain definite guides for its avoidance which should be understood by those who operate in this region. Another patient had a severe shoulder droop from a cutting of the spinal accessory nerve before its entrance into the trapezius muscle. The incision was small, a very few glands were removed, yet the nerve was cut and a serious deformity resulted. This was avoidable. Another was subjected to a two-hour operation when three-quarters of an hour should have sufficed.

These instances are cited to show the necessity of attention to technicalities and to explain the lack of enthusiasm in those who have not taken the trouble to attend to them.

### RECURRENCES IN LATE AND UNFAVORABLE CASES

Those who mainly see late and unfavorable cases will find so many recurrences that they will not be enthusiastic about the operation. There should be a fair number of children in every large group, otherwise one hasn't the right conception of the value of the operation. Particularly, one should not be discouraged by the unfavorable cases, and hence withhold from the early cases, especially the children, the quick cure which

operation is likely to give. Individual surgeons whose experience is largely with adult patients with extensive tuberculosis naturally do not become enthusiastic over the treatment. Recurrences are discouraging, and operation in some of these advanced cases is very tedious, but these are not the cases whom this discussion concerns. We are studying the children and it is not fair to deprive them of the advantage of early operation because patients of an entirely different class have recurrences. Those who see the good results in children and in favorable adults must be enthusiastic about them.

At least three other kinds of treatment are often considered: first, constitutional, second, X-ray, third, tuberculin.

I have studied all of them with very great interest, and have visited various institutions where they were in use and have seen the results, and I can see no reason for advocating long periods of treatment which give uncertain results when there is a simple short treatment which gives such good results excepting in those cases of diffuse tuberculosis for whom radical removal is impossible or very difficult.

I would advocate the best hygienic and constitutional measures which can be obtained, but so many of my cases have lived in unsanitary tenement house surroundings that I have had the opportunity of seeing what surgery can do without hygienic help.

Yet we often have patients brought for consultation with the story of months and even years, of treatment, and the entire family has been enslaved by the kinds of treatment which have been used. They have gone South in the winter and North in the summer, the patient's tonsils have been removed, X-ray has been tried, vaccination, out-of-door life, and various other forms of treatment, and the patient is finally brought with the request that something else should be done before operation is resorted to. This fear and suspicion of surgery is brought about by a misapprehension of what surgery will do and it is not fair to let the misunderstanding exist.

### Discussion

DR THOMAS S. SOUTHWORTH, New York: It is inevitable that, in the discussion of the cervical glands, the tendency should be to revolve about the question of tuberculosis. However, I wish to discuss the subject from a pediatric standpoint. It is of course, important that the diagnosis of tuberculosis should be made, if present, but we must not forget while talking of tuberculous cases that there are many other conditions which produce more or less enlargement of the cervical glands, and that the majority of them can be traced, if sufficient care is exercised to some lesion of the skin, mouth or gums, near the en-

largement. Some lesions affect preponderately a single gland through lymphatic drainage, others affect a group of glands.

Cases of enlarged glands have been grouped as acute, sub acute and chronic.

The differentiation of the acute types of glands is usually simple if they are carefully studied, and if the diagnosis of tuberculosis is not too hastily made during the acute stage, and thus a good deal of lay anxiety and medical uncertainty can be set at rest.

Differentiation between the sub acute and chronic enlargements is a somewhat difficult matter. Many young children have, here and there, palpable nodes, not very pronounced, the origin of which could be traced to some former irritation which is not always remembered. The child often suffers from malnutrition, a very common factor, and in such a child the lack of subcutaneous fat makes the nodes more prominent. These are often negligible cases, if the glands do not tend to increase in size, and especially when not connected with the lymphatics of the tonsil and naso-pharynx. When, however they are connected with the latter, and continue to enlarge, despite removal of tonsils or adenoids, causing asymmetry, it is then more conservative to remove them.

I would like to speak of the differentiation of the acute suppurative adenitis of infants, which at times presents a similar appearance to the early picture which was shown by Dr Dowd. There is here often a suspicion of tuberculous in the early stages, though tubercular glands are very rare in young children, and tubercular enlargement of the gland is measured by months not days. The acute enlargement occurring in infants, below the angle of the jaw, appears almost over night as a sudden, marked enlargement of the gland. With these cases there is almost always a history of naso-pharyngitis or cold or similar infection. If fever persists, suppuration is probable and takes place in about fourteen days.

In these cases my own procedure is at variance, with that of the general surgeon, who follows the surgical rule in pus cases and makes a free incision and packs the wound with gauze, causing unnecessary scarring. The gland should be allowed to soften before incision is made, when there is fluctuation, pointing and redness the abscess can be incised for three-eighths inch, and the skin stretched with dressing forceps to allow of the removal of the pus, and the insertion of a very small drainage tube, or rubber tissue drain. So drained, the cavity contracts promptly, and heals in a few days with the minimum of scarring. Such cases at times can be aborted early by special attention to the naso-pharynx, so as to prevent further absorption and by treatment with the ice bag. The older the child, how-

ever, the more hopeful the prognosis. The subsidence of the non-suppurating gland, as might be expected, is slow, but if it does not subside we have to suspect that there is a mixed, or a tubercular infection. In the early stages it is inadvisable to give any form of massage, as the best plan is to avoid all further irritation of the gland as far as possible.

DR DEWITT H. SHERMAN, Buffalo. I believe that tuberculosis is responsible for a great many of these enlarged glands in children, and that this type is the commonest seen by the surgeon. But there is an acute non-tubercular type, very commonly seen by the pediatricist, which follows more or less severe infection of the pharyngeal tonsil.

Early in the infection or when the cervical glands are first involved we have one quite characteristic sign, and that is the remarkable fluctuation of the temperature. It ranges from normal or nearly normal in the morning to 104, 105 or 106, and in one case, which I saw, 107 in the evening. The most careful examination of these children reveals no other discoverable cause outside the nasopharynx.

The duration of this fluctuating temperature averages only a few days and on the third or fourth day, sometimes later, the cervical glands become sensitive and enlarged. They soon, as a rule, subside.

Should the infection be severe enough the gland may break down with abscess formation.

Early operation for removal of this type of involvement is apt to be followed by a breaking down of the incision, thereby preventing primary union, because the wound becomes infected by the original infection.

Unless these glands persist and become chronic, or unless they break down due to the severity of the infection, radical surgical interference is not wise.

To prevent their recurrence surgical attention to the naso-pharynx and tonsils is strongly indicated.

DR HENRY W. FRAUENTHAL, New York. The glands of the neck, as discussed here this afternoon, seem to be confined to the 7 per cent admittedly tuberculous cases of glandular involvement. Seventy-five per cent of the cases are staphylococcal infections and 25 per cent streptococcal, according to statistics. I see, however, many cases which are straight syphilitic cases with secondary infection. We overlook the fact that a number of children, apparently well, have syphilis and that those with general gland involvement are numerous. This type of adenitis is apt to break down and can be helped by drainage, after which they heal up promptly. Many of the children could be treated with anti-syphilitic remedies. It is certain that at least 20

per cent of children have congenital syphilis and require no surgical interference.

DR HARRY R. TRICK, Buffalo. I have very little to add to this symposium, as the ground has been covered very thoroughly. One point which I may possibly have missed in these papers, is in regard to differentiation in diagnosis. The cases where the nodes have been through a series of enlargements with retrogression, are generally tuberculous. In Buffalo, we use the Rollier sanitarium treatment for tuberculosis very largely and are enthusiastic about the results. One thing has impressed me in hearing these papers, and that is our careless method of nomenclature, as for instance in the indiscriminate use of the words "glands" and "nodes." Would it not be possible to correct this tendency? We use the words lymph adenitis and lymph adenoma, instead of lymphitis and lymphoma and I believe it would be worth while to be more exact in our use of terms. I hope very much that these papers will be published together. They form a valuable collection of facts.

DR GEORGE E. BARNES, Herkimer. An important matter is the *prevention* of infection of the nodes and of other parts of the body. Apart from those cases in which operative treatment is required there are many cases of pyorrhea alveolaris and a few cases of tonsillar crypt infection in which hygienic practice may be sufficient. This applies more particularly, of course, to adults. After brushing the teeth subsequent to each meal, about a teaspoonful of water is taken into the mouth and swished around while suction is made on all infected parts of the mouth and fauces. If the pyorrheal pockets and tonsillar crypts are not kept clean by this procedure operative treatment must be further considered.

DR G. PFAHLER, Philadelphia. My experience coincides with that of Dr. Dowd, but the 42 per cent recurrences quoted, can be eliminated if treated post-operatively, and all cases should have post-operative treatment. Another point is that it is very inadvisable to cut into a Hodgkin's gland. I have seen many horrible developments of Hodgkin's cases, following the taking out of a gland for investigation. The glands rapidly enlarge and become very much worse, and I would like to protest against this procedure. Except in doubtful cases.

DR CHARLES N. DOWD, New York. I want to endorse what Dr. Southworth has said about opening abscesses in children. The day for making long incisions in these cases has gone by. A short transverse cut can be made and there will be practically no scar left. A big incision is unnecessary in almost every case of acute abscess. As regards syphilitic cases, I have seen many cases of combination syphilis and tuberculosis.

They should have their cervical lymph nodes removed and should also be given the benefit of antisyphilitic treatment. If the operation is omitted they usually have to come back to it at a later and less advantageous time. In regard to the Rollier treatment I have seen cases taking this treatment for one whole year, which I am sure I could have cured in half an hour surgically. The treatment is all very well after an operation, but it does not take the place of it. I have seen cases where the whole family was put to inconvenience for one year, because one member was taking the treatment. I am glad to hear the question of nomenclature brought up. I have worked over this subject, and I always speak of lymph nodes," but I find an increasing tendency to speak of "lymph glands" although there is no analogy between the ordinary secreting glands and the lymph nodes. In regard to the tuberculin test, there have been a great many mistakes made, and I would rather take my chances on the appearance of the lymph node. I do not depend implicitly on tuberculin, although I use it occasionally.

The X-ray surely has a place in the treatment of neck tuberculosis but those who have used it must say that operation is to be performed if the lymph nodes can be clearly and thoroughly excised. Where this is impossible—and in post-operative conditions where time is persistent in duration—the X-ray may be resorted to.

DR THOMAS B. HARTZELL, Minneapolis. Minn. Infection from the teeth is a source of the milder type of glandular lesion both in children and adults. I therefore consider that it is unwise to operate on swollen glands of the neck until tooth and tonsil infection has been ruled out, and the glandular infection proven to be tuberculous.

## WAR

SOME OF ITS EFFECTS UPON THE HEALTH OF THE MILITARY AND CIVIL POPULATION, BOTH DURING AND AFTER WAR \*

By GEORGE W. GOLER  
ROCHESTER, N. Y.

IN the past men have estimated the horrors of war by the number of killed, wounded and missing and while account had been taken of the deaths by disease, it is only recently that any real preventive measures have been introduced to prevent disease, both during and after war.

A brief comparison of the losses of life by gunfire and disease in past wars is of interest because of the much larger number of lives lost by

disease than by violence, and a study of these figures may teach a valuable lesson and show why measures should be introduced to prevent the extension of disease from the military to the civil population, both now and after the present war.

To go back no further in history than the wars of Napoleon I (he who sacrificed more human victims to war than any other war lord, save only William I of Hohenzollern) we find that of several million men who followed him into battle at various times, 400,000 were killed by gunfire or died of wounds while 600,000 died of disease. During the twenty-two years in which England found herself involved in the Napoleonic wars the loss of life among her soldiers from disease was seven times as great as that from gunfire.

In the chapter on military selection and race deterioration by V. L. Kellogg in 'Losses of Life in Modern Wars,' Carnegie Endowment Publication, from which and from other books and related publications many of these facts and figures have been obtained, Kellogg says: "The 10 to 30 per cent of mortality from gunfire in such bloody affairs as Austerlitz, Wagram, Moscow, Lutzen, Magenta, Solferino and Waterloo was increased by disease in the same campaigns to the appalling proportions of 60 and even 70 per cent." And yet, to many people Solferino and Magenta are colors not battles in which on blood-soaked fields the twin gods of war and disease strove to devour the greater number of victims.

It is true that in the comparatively short Franco-Prussian war of 1870-71 the losses by artillery and small arms nearly equalled those from disease, but we are to remember that the French figures are woefully lacking in registering the deaths, both by violence and disease, and that this war was in point of numbers engaged and short period of time the most terrible of all wars. Further than this, the Franco-Prussian war is celebrated in the annals of disease because of the world-wide epidemic of smallpox which occurred both during and after this war. An epidemic of disease with no parallel in the annals of modern warfare.

In our own Civil War the losses of life from wounds and disease (without Confederate figures, which are not to be had) were 110,000 men killed in action or died of wounds, 224,000—double that number—died of disease, out of a total of 2,278,000 men in the Union armies.

From this terrible mortality due to disease one would think that nearly forty years later an enlightened American nation through its medical personnel in the Army, would have succeeded in protecting the American troops from disease, but we find that of 107,000 troops encamped during the Spanish-American War in 1898, for every man who lost his life in action seven died of disease and one third of the total force engaged were infected by typhoid fever. Although we

ever, the more hopeful the prognosis. The subsidence of the non-suppurating gland, as might be expected, is slow, but if it does not subside we have to suspect that there is a mixed, or a tubercular infection. In the early stages it is inadvisable to give any form of massage, as the best

114

knew almost nothing of the practice of vaccination against typhoid prior to 1900, at the same time enough was known of the principles of sanitation, had they been practiced, to have prevented such wholesale death and damage by preventable disease as occurred during this disgraceful period of our American medical history.

It remained for the Japanese during the Russo-Japanese war in 1904, six years later, to teach us real military sanitation and hygiene. During this war the figures relative to the losses by wounds and disease on the Russian side are not available, but some very interesting and accurate accounts are obtainable of the Japanese losses. The total number of men engaged is not stated, but the number of killed in action was very large, 47,300. The number of those dying of disease—chiefly beriberi, was 21,800—for the first time in the history of any prolonged war, one-half the number of those dying of wounds.

In what has thus far been said no account has been taken of the deaths by disease among the civil population living in the territory adjacent to the theater of war, or in those remoter parts of the world to which disease was carried by the soldiery during and after the war by trade or emigration routes. But, from what is known relating to the history of the causes of death by gunfire and disease, both in armies during and after the war and in the civil population in contiguous or remote districts, it ought to be perfectly apparent that death in former wars has not been caused in the main by violence, but it has chiefly been caused by communicable, that is, preventable diseases.

Going back a little farther into history it is found that about the end of the Middle Ages, if any one disease can be said to have been the Nemesis of armies and of the civil population, both during and after the war, that disease was plague. With the dawn of the Renaissance typhus affected both armies and civilians alike. Perhaps men's habitations became a little less rat-infested in the first instance, and later they may have become a little less dirty. Plague began to disappear, typhus, however, still persisted. During the Wars of the Empire and the French retreat from Moscow, where the Russians gave the failing French columns no rest, at Vilna, the French lost 30,000 by typhus alone while more than 64,000 Russians, most of whom died of typhus, fell from this disease. How, then, did the civil population fare? Vilna had a population of about 26,000 and no less than 55,000 Russians, soldiers and civilians alike.

per cent of children have congenital syphilis and require no surgical interference.

DR HARRY R. TRICK, Buffalo. I have very little to add to this symposium, as the ground has been covered very thoroughly. One point which I may possibly have missed in these papers, is in regard to differentiation in diagnosis. Cases have been through a GOLER—IVAR

with retrogression, are Buffalo, we use the of disease follow for tuberculosis very across their territory about the results the people of neighbor in hearing these the horrors of war, method of non-brought to them by indiscriminate use typhus caused enormous. Would it among the combatants agency? We use two diseases, typhus claim adenoma,

As an example, take the case and I believe in 1813, had a population of exact in our year more than 21,000 soldiers that these and more than 5,000 citizens. I form a that city in 1813 is described in a letter

"It was a gruesome sight to see an full of naked corpses, thrown together in most horrible positions, drive away from the hospitals and set out for their destination. Terrible days began about the middle of May, many house-owners were obliged to quarantine many as two, three and even four hundred. Presently persons suffering from wounds, sepsis and infectious disease began to arrive from Berlin, some straggling along piteously on stretchers, others being rolled along in ghastly groups on pushcarts. This disease-spreading mass was housed in the homes of citizens, since the two five hospitals were no longer able to accommodate them. The houses, yards, streets, and public squares were full of dirt and refuse. Dearest food, resulting from the breakdown of means of supply, added to the general misery. Entire families were wiped out, and many houses are standing empty (1814). Wagons bearing the dead clattered on all the streets, and there were few inhabitants who did not wear some outward sign of mourning for lost relatives."

Leipzig in the same period had a population of 35,000. The average number, and I would estimate, in the pre-war war procedure. Except in 1813, the year nearly trebled.

80,000. F. N. Dowd, New York. I want to wound. Dr. Southworth has said about doubtful cases in children. The day for making incisions in these cases has gone by. A short transverse cut can be made and there will be practically no scar left. A big incision is unnecessary in almost every case of acute abscess.

As regards syphilitic cases. I have seen many cases of combination syphilis and tuberculosis

They should have their cervix moved and should also be given syphilitic treatment. If the about one in ten they usually live to come back. The Russo-Japanese war of 1828-9, the Russo-Turkish war of 1877-8, and at one time or another I have seen them were sick enough to be sent for one whole hospital. They suffered from cholera, typhus, typhoid, smallpox, dysentery, and from them it does not take long to spread to the civil population where the whole force of cholera of the early 30s may for one year, but rise in this war, but probably it was treatment of the cyclical rise of cholera and no nomenclature issue in the war is claimed for it, but this subject of the war of 1854-6 let loose upon the world, but I would the last great pandemic of cholera of "lymph" war. Cholera made its appearance in between the in 1853, and the following year spread throughout the entire country. It was carried by the French troops in the field and distributed at the various halting places on the way thither. In two or three months or less they lost from cholera more than half of their army of 55,000 men. Soldiers and all civilians, both French and English Commanders-in-Chief, all died of cholera. The English loss in the Crimea was 20,556, of which 2,590 were killed in battle or died of wounds, while more than nine times as many—18,000—died of disease. Of 1,150,000 men engaged on both sides, 64,000 died of wounds, 155,000 of disease not including the Turkish losses, which are unknown. From France cholera spread to the Crimea, affected the troops and civil population of Russia, Turkey and neighboring countries, and by the soldiers it was carried back to France and England, and from these countries found its way through infected emigrants to the American shores to your city and to mine.

not the only disease affecting this war. Dysentery, typhoid, and cholera have been the victims of the war.

WAR

SOME OF ITS EFFECTS UPON THE HEALTH OF THE MILITARY AND CIVIL POPULATION DURING AND AFTER THE WAR

By GEORGE W. GOLER, ROCHESTER, N. Y.

IN the past men have estimated the horrors of war by the number of killed, wounded and missing, and while account had been taken of the deaths by disease, it is only recently that any real preventive measures have been introduced to prevent disease, both during and after war.

A brief comparison of the losses of life by gunfire and disease in past wars is of interest because of the much larger number of lives lost by

rank of the opposing forces, it was disease, a foe more deadly than the fire of artillery, the charge of cavalry or the rattle of musketry. These were the penalties paid by the troops engaged in the Crimea. How did the civil population fare? Take as an example the ravages of just one disease—typhus. In the Crimean War, between 1853-56, more than 900,000 English, French and Russians, soldiers and civilians, died of typhus. The loss of life by typhus among the civil population in Russia and Turkey and the Balkans has been estimated at more than a million men, women and children.

In the American Civil War, in which more than two million men were engaged in the Union armies, 35,000 died of typhoid. Smallpox was endemic and killed hundreds, malaria, dysentery, measles and scarlet fever were responsible for thousands of deaths among the soldiers. After the war ended the soldiers carried typhoid and other diseases home, and the great pandemic of typhoid after the Civil War had its real origin on the battlefields and in the camps.

In the Franco-Prussian War of 1870-71 the number of French engaged is not known. The Germans had 1,500,000 officers and men, the average number in the field being 815,000, 75,000 of these troops contracted typhoid and gastric fever and nearly 9,000 succumbed to these diseases. Typhoid spread into the cities around which the battles of this war raged, and the mortality of these cities was three times increased, many of the civilians dying of typhoid. Dysentery, malaria, measles and other diseases affected both troops and civilians, but of all the epidemic diseases directly traceable to this war the world-wide epidemic of smallpox which the Franco-Prussian war set in motion, is one of the most, if not the most notable example of a disease spreading through armies and transferred to the civil population and in the short space of two years invading most of the habitable globe. In the early 70s compulsory vaccination existed in few of the European states. In some of the south German states, Bavaria, Wurtemberg, compulsory vaccination had been introduced between 1807 and 1818. Revaccination was hardly known, as vaccination, according to Jenner, was then believed to confer immunity for life. All recruits in the German armies were vaccinated, and in the French armies the enlisted men were supposed to be vaccinated, but revaccination in the armies and among the civil population existed nowhere in Europe until after the lesson of the early 70s. The German protecting of some of the peoples of the south Germany were the only troops that were fairly protected by vaccination. In France, vaccination even in the army, had been neglected and the country the mortality from smallpox was from 2,000 to 4,000 deaths per annum. In 1869-70 smallpox became epidemic

Read at the Annual Meeting of the Seventh District Branch of the Medical Society of the State of New York at Canandaigua September 17, 1917.

over the whole of France. The mortality for that period is unknown, but in thirty-nine of the eighty-seven departments the deaths from the disease numbered over 14,000 in 1871. Just what the number of deaths were in France as the result of the smallpox epidemic is not known, but between 1869-70 conservative French reporters believe that over 200,000 people lost their lives in France because of smallpox, and as the disease was not under control until after 1873 the deaths and the suffering from this disease must be left to the imagination. In Germany where more trustworthy figures are to be had, the following facts are in evidence. In 1870 that country was almost free from smallpox. In 1871 thousands of French prisoners were taken into Germany and they exacted from the German people a terrible toll for their imprisonment. Following their enforced journey into that country, smallpox broke out, and more than 120,000 deaths from this disease occurred in Germany between 1870 and 1873. From France and Germany the disease spread to Switzerland, the Netherlands, Belgium, Austria, Italy, England and the Colonies, and in British India alone 500,000 persons died of it. The disease was carried into America along the coast and inland as well. Smallpox marked and killed its victims by the thousands. The old city of New York on Manhattan Island had in the years between 1870-76 thousands of cases and more than 2,000 deaths from smallpox.

Various other examples of epidemics during and following wars might be cited, such, for instance, as the outbreaks of typhoid in our own country after the Spanish-American war, where our encamped troops contracted typhoid to such an extent that one out of five of them suffered from the disease and typhoid was carried by many survivors to every part of the country. But time forbids the further discussion of this gruesome subject at a time when disease was more dangerous than gunfire and hospitals more to be feared than fields of battle.

War and its effects on the military and civil population has been discussed in this paper from the standpoint of the past in order that we of the present may learn the lesson of what the horrors of war mean through the conveyance of disease to the civil population, and for the further purpose of showing what we might do to minimize the dangers of war-borne diseases. In what has been said attention has been chiefly called to some of the disappearing diseases, as smallpox and typhus. These diseases have disappeared because we feared them. If we feared diphtheria and typhoid as much as we feared smallpox and typhus, diphtheria and typhoid would be no more.

What are we to do to prevent the possibility of war-borne infections? Much of the process is really very simple. We have protective meas-

ures against many diseases. We can vaccinate against whooping cough, test and vaccinate against diphtheria, vaccinate against typhoid and paratyphoid, vaccinate against smallpox, and we can vaccinate against their carriers. We can all aid in raising the health of our people to the highest. We can on the first appearance immediately attack any sign of a departure from the normal in our men, women and children, and we ought to provide means for repairing the defects of men exempted for defects by the Draft Boards. We have the means of protection against many diseases if we will but use them properly. We can keep our dwellings free from rats. We can see to it that the heads of our school children are free from lice, that their teeth and noses and throats are in good repair. We can pay more attention to cleanliness than we have ever paid in the past. We can guard our water, food and milk, urge repair and prevent waste, and if we do these things we will have little to fear from the known diseases accompanying or following war.

But there is another and an exceedingly important matter relating to disease affecting both the civil as well as the military population. It is very well known that disease comes in cycles, that some of its cycles are more virulent than others. Some epidemics of smallpox are mild, others are exceedingly severe. So it is with diphtheria. So it, doubtless, is with typhus. Old diseases appear in widespread epidemic form, such, for instance, as the epidemic of cerebro-spinal meningitis and poliomyelitis.

But the most important matter connected with the occurrence of epidemic disease after the war is syphilis. Most of us are familiar with the terrible outbreak of syphilis which occurred in 1494 after the French invasion of Italy, there, after many of the soldiers had been discharged, syphilis broke out in the south of Europe and spread over the whole civilized world. It is possible, therefore, that after this war we might have a virulent outbreak of some present-day disease which exists in mild form. Syphilis and gonorrhoea we are bound to have in large and increasing numbers, judging by the reports from the armies in the field. Suppose syphilis were always to assume a virulence such as is occasionally seen in malignant syphilis. Suppose, for instance, that measles or scarlet fever or even chickenpox should assume an unknown or as yet undescribed severity might we not be almost as helpless as some of the men of old in the presence of the great plagues which affected them?

On the battlefronts we have new forms of destruction devised by the ingenuity of the philosophical Huns. Small thanks to them for liquid fire, the development of aeroplanes and submarines, for sowing disease broadcast, for suffocating gases more deadly than small-arms and artillery, but not nearly so deadly as the dis-

eases of the old armies. While we have to a great extent prevented disease among the troops, we may at any time develop a new and more virulent strain of an old disease such as may make the future a time of dread. We should therefore, institute all the tried measures for the prevention of disease, if we are to do our duty as patriots, to maintain the health of our people, particularly our children, at its highest.

## Legislative Notes

### BILLS INTRODUCED INTO THE STATE LEGISLATURE

#### IN SENATE

Giving the Board of Regents power of supervision of experiments on living animals. The Board is to designate annually on June 1st such number of persons as it deems necessary to represent it in such supervision and to serve without compensation. By Mr. Boylun To Judiciary Committee. Printed No 318 Int 303.

Adding new sections 701 702 Education Law prohibiting vivisection of animals or experiments upon living animals in the common schools or exhibition in such schools of animals which have been vivisected. The Education Commissioner may revoke a teacher's license for wilful violation. By Mr. Boylun To Judiciary Committee. Printed No 319 Int 304.

Adding new sections 430 to 438 Public Health Law defining and regulating the practice of drugless therapy—a method of healing disease without drugs or medicine of any kind using massage, hydrotherapy, electrotherapy, hydrotherapy, naturopathy, chiropractic, neuropathy, dietetics, suggestive therapeutics, napropathy, magnetic healing, virotherapy, zonotherapy or any other drugless method that may hereafter become known. The Regents are to appoint a board of examiners in drugless therapy by July 1 next. This article shall not affect the practice of religious tenets of a church. By Mr. Boylun To Public Health Committee. Amended and recommitted. Printed Nos 436 614 Int 405.

Enacting the Health Insurance Law to be chapter 71 of the Consolidated Laws establishing a system of health insurance for industrial workers and their dependents to cover sickness, accident, disability or death resulting therefrom except cases coming under the Workmen's Compensation Law or in which liability for damages or other benefits is imposed by Act of Congress. Federal State and municipal employees for whom provision is made through legally authorized means are excepted. Minimum benefits include medical, surgical and nursing attendance and treatment for employee and for dependent members of his family and cash benefits. The Industrial Commission is to administer the act. It must divide the State into districts corresponding to county districts or otherwise and establish a local fund in each district and may establish one or more trade funds or approve one or more establishment funds and provide for election of a board of directors of not more than seven members for each fund. An equal number of directors must represent employer and an equal number employees. The odd director to be chosen by the other directors. Contributions to the funds are to be made half by the employer and half by the employee with certain exceptions. There are numerous other provisions. Amended and recommitted. Mr. Nicoll To Judiciary Committee. Printed Nos 544 and 692 Int 496.

Amending sections 41 42 45 49 49 a 51 51 a Labor Law by establishing a bureau of health insurance in the Labor Department in charge of a fourth deputy commissioner at \$6000 a year for the administration of the Health Insurance Law. Mr. Nicoll To Labor and Industry Com. Printed No 706 Int 619.

#### IN ASSEMBLY

Renumbering sections 450 and 451 to be sections 500 and 501 and adding new sections 450 to 465, Public Health Law regulating the practice of chiropractic, providing for a State board of examiners of chiropractic of five members, appointed by the Regents for three year terms upon nomination by the N. Y. State Chiropractic Society, Inc. to make rules and regulations and conduct examinations for licenses for practitioners. Present practitioners are exempt from examination. License fee \$25 with annual registration fee of \$5. By Mr. Fearon To Public Health Committee. Printed No 533 Int 521.

## United States Senate

### The Owen Bill

#### ARGUMENTS FOR ADEQUATE RANK FOR OFFICERS OF THE ARMY MEDICAL DEPARTMENT

The introduction of the Owen Bill (S 3748) and the Dyer Bill (H R 9563) on February 5 1918 most opportunely renews the general interest in the important matter of securing adequate rank for Medical Officers of the Army.

In this connection the following arguments which were distributed last autumn to the County Committees of the Council of National Defense Medical Section in New York State should be interesting to every physician who is willing to take the trouble to give his support to this legislation.

Rank is to a medical officer what professional emolument is to a civilian practitioner. The higher his rank the greater his opportunity for instituting and carrying through large and effective measures for the sanitary protection and care of troops.

A medical officer's opportunity to do good work increases in scope with the increase in his rank.

No degree of skill and learning however great and however freely offered can be efficiently used without authority to back it. Rank alone carries authority in the Army.

A medical officer's authority is measured entirely by his rank not by his professional ability. If his rank is not sufficient to insure great authority he will be unable to apply his knowledge and skill to the best advantage. We all recognize that the best of advice is no good unless taken and acted upon. In the Army it is not often taken and acted upon unless the advisor has sufficient rank to add the weight of authority to his advice.

Great responsibility demands and should be accompanied by great authority. Those medical officers upon whom rests a large responsibility for the safety and comfort of many troops should be given authority commensurate with that responsibility. In the Army this means high rank.

High ability demands great rewards in civil life and deserves great rewards in the Army. Part of a soldier's reward is increase in rank pay and opportunity. Army Medical Officers of unusual professional or administrative ability deserve this great reward quite as much as do able officers of the line. The highest of such reward are provided for line officers. They ought similarly to be provided for medical officers.

Justice was done the Navy Medical Officers in this regard last year increasing their rank by legislative enactment. It ought to be done this year similarly to Army Medical Officers.

At present higher rank is open to Navy Medical Officers than to Army Medical Officers. This is manifestly unjust.

The above propositions are axiomatic. Their acceptance by intelligent individuals requires no burden of proof to be applied. These propositions do however require careful thorough emphatic and apparently repeated presentation to convince our Representa-

tives in Congress of their primary importance, primary as affording opportunity for that efficiency of the Army Medical Department upon which the integrity and preservation of the fighting forces largely depends.

The question was asked fifty-five years ago "Will increased rank make your medical men better doctors?" The answer then was, "Does increased rank make line officers, quartermasters, and those in other corps more proficient?" Today we give a positive reply, "Yes!" for it will make medical officers of better doctors! The point, of course, is this: Men of great ability seek great rewards. The higher the rank obtainable, the better the class of young physicians who will be attracted to the Medical Corps.

Sir Alfred Keogh, Director-General of the British Army Medical Service (in an interview with Mr Edward Marshall, the American correspondent, as reported in the *Journal of the American Medical Association*, July 14, 1917, page 134), said, "Lord Kitchener gave me an absolutely free hand. Men at the head of any medical department must have a free hand if the medical work of that campaign is to be carried out." The medical officer cannot, of course, have anything like a "free hand" unless his rank is properly proportionate to that of the Commanding Officer for the sanitary care of whose troops he is made responsible.

The failure of England's Mesopotamia Expedition is said to have been due to disease among the soldiers. The disease among the soldiers is said to have been due to a failure of the Commanding General to accept the recommendations of the Chief Medical Officer regarding their sanitary care. This failure to accept the recommendations of the Chief Medical Officer is said to have been due to his lack of authority with which to impress the Commanding Officer.

Rank means authority in the Army. We ought to try to obviate the possibility of any such reports regarding the American Expedition to France!

Confirming the statement that medical officers deserve high rank is the fact that they are given it in other armies and in our own Navy.

The Italian Army Medical Corps has 0.52 per cent General Officers.

The French Army Medical Corps has 0.47 per cent General Officers.

The British Army Medical Corps has 1.10 per cent General Officers.

The German Army Medical Corps has 0.20 per cent General Officers.

The Austrian Army Medical Corps has 0.68 per cent General Officers.

The Japanese Army Medical Corps has 0.89 per cent General Officers.

The United States Navy Medical Corps has 0.50 per cent General Officers.

Contrast with the above the condition in the United States Army Medical Corps. It was allowed one General Officer by the Act of June 3, 1916.

SENATE No. 3748

#### AN ACT

Fixing the grades of the commissioned officers of the Medical Corps and of the Medical Reserve Corps of the United States Army on active duty, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that hereafter the commissioned officers of the Medical Corps and of the Medical Reserve Corps of the United States Army on active duty shall be distributed in the several grades in the same ratio heretofore established by law in the Medical Corps of the United States Navy.

The Surgeon General shall have authority to designate as "consultants" officers of either corps and relieve them as the interests of the service may require.

Advocate the passage of the Owen Bill

## Military Notes

### RECRUITING OF THE MEDICAL RESERVE OFFICER, PAST, PRESENT, AND FUTURE

By FREDERICK T. VANBEUREN, JR.

About a year ago, under the leadership of the medical member of its Advisory Commission, a Medical Section of The Council of National Defense was formed in Washington with the object of assisting the Surgeon General to secure the necessary reserves of Medical Officers and of co-operating in any other activities desired by him.

That Central, National Committee at once set about the formation of State Committees and the latter began the organization of County Committees so that, in a comparatively few months, a great body of medical men were set to hunting among their professional brethren for prospective Medical Officers. Some hunted hard and some did not, but the net result of their labors is that, on the 23rd of February, 1918, 21,740 physicians had been recommended for commission by the Surgeon General in the Medical Reserve Corps.

Now how was it brought about that more than one out of every seven doctors in these United States has offered himself to the Army within nine months after the declaration of war?

Although local methods varied somewhat, the commonest and most successful were information and exhortation. There is no space to describe how these were applied, elsewhere, but this is what was done in New York State, and it must be remembered that little of it could have been accomplished without the co-operation of the County Committees which was so generally and loyally given to the State Committee. First of all, a Special Medical Census was taken with a view to ascertaining accurately the resources of medical personnel in the State. For that we have to thank Dr. Karl Connell, then Major, Medical Corps, N. G. N. Y., whose initiative and persistence gave to this State a scientific classification of the entire profession which has served as a model for a number of similar undertakings elsewhere. Next, a Recruiting Tour was undertaken, the end of May, to spread abroad the news that Medical Officers were needed for the Army. Seven officers, assigned to active duty for the purpose, collectively visited 60 counties of the State in three weeks time at a cost of about ten dollars for each applicant secured. The immediate result was 223 applicants for commission accepted.

Another result of this tour was that the officers who made it returned with the firm conviction—which later experience has only hardened—that a form of selective draft based on a Federal Classification of all physicians and with stated exemptions, would be the most desirable and fairest method of securing the enormous numbers of Medical Officers needed for our prospective armies. It was not considered feasible by the Central Committee at Washington to institute such measures at the time and the New York State Committee was directed to secure as many applicants for commission as rapidly as possible by the Individual Volunteering method. The faith of the Touring Board in mass volunteering with selective draft was, however, ratified by the New York State Committee in an unanimous resolution and permission was secured from the Central Committee to agitate for it as a future method while continuing to secure individual volunteers in the old way.

To carry out these lines, connected efforts were made to disseminate information as to the need for Medical Officers and at the same time to secure the acceptance of the principle of Universal Service among the medical

men of this State. Information was disseminated in this way.

Thirteen serial letters of instruction and exhortation were sent to each of the sixty County Committees.

Hundreds of personal appeals were made to personal friends and acquaintances.

Thousands of letters were sent to physicians of draft age in and near New York City, to recent graduates of the College of Physicians and Surgeons and Cornell Medical College, and to young physicians classed by the Medical Census as available and desirable, throughout the entire State.

Open letters, editorials, articles and news items were published in the daily papers and in the medical journals.

Scores of meetings were held in this and other cities of the State, where members of the Regular or Reserve Corps told of the needs of the Medical Department.

The effort to prepare for a more conservative and efficient mode of recruiting for the future took this form.

A petition setting forth the advantages of universal service and selective draft based on classification with exemptions was drafted, authorized by the State Committee and sent out to County Committees, County Medical Societies, Branches of the State Medical Society, and every hospital and medical school in the State. About 8,000 copies also went to individuals in the pages of the bulletin published by the Health Department of New York City. This petition actually secured the signatures of more than ten per cent of all the physicians in the State and the movement had the approval of such men as W. J. Mayo, Victor C. Vaughan, Joseph Bloodgood, Haven Emerson, Herman Biggs and many other leaders of the profession in civil life as well as the unofficial commendation of many officers in the Medical Department of the Army and Navy. More than twenty other State Committees expressed a similar belief in the justice of the principle of universal service and about a dozen of them wrote the Central Committee in Washington advocating a widespread agitation for its acceptance. The editor of the *Journal of the American Medical Association* expressed himself as heartily in favor of the idea and at the same time politely refused to feature it in the pages of his valuable periodical.

The results of these and other activities are that

Two thousand and more physicians from New York State joined the Medical Reserve Corps between May 1, 1917 and February 1, 1918 and that the medical profession of this State is seriously considering the desirability of a scheme of universal service whereby each man whether in private practice, hospital, medical school or in the army may feel that he is doing his duty by the Government and under the Government and may feel that others know that he is so doing it. One or two of the District Branches of the State Society and several county and lesser societies have recently endorsed this principle by resolutions of which copies have been forwarded to the State Committee.

#### PRESENT

Up to the present time over 21,000 have been recommended for commission from the whole United States of whom 2,655 are from New York State. But only 16,636 are actually in the Reserve Corps today, 1,294 having declined the commissions offered, 1,050 having been discharged since being commissioned, 2,760 being still on the way from recommendation for to actual acceptance of commission. Of the 2,655 recommended from our State probably not more than 2,000 are today actually in the corps and we have not done more than our duty by the first draft while the second is soon to follow.

We have however nearly enough in numbers for the present army although the quality might in certain

instances be improved. Consequently the rather indeterminate previous efforts to secure the largest possible number in the shortest possible time are giving way to attempts to secure men of known eligibility in other words to select on a more definite basis.

Lists are being prepared of physicians of recognized ability throughout the United States as well as in this State and the individuals on such lists are being invited by individual letter to apply for commission.

Lists of hospital attendants are also being prepared so that from those hospitals who have not yet furnished a fair proportion to the army, eligible individuals may be invited to apply.

To sum up, one may say that for the first four months period following May 1, 1917 men from New York State joined the Reserve Corps at the rate of over three hundred a month while for the second period of four months less than two hundred a month were secured and they are now coming in at a considerably lower rate.

#### FUTURE

No one knows how long this war may last, nor how many Medical Officers may be needed. If we eventually require 45,000 as Bloodgood estimates we shall have to take more than a half of the available supply and selection of the most careful and rigid description will be absolutely necessary to protect the integrity of the civil medical structure.

The present individual volunteering system is showing its weakness by

Slowing up of the number of applications.

Echoes from the camps and cantonments regarding unsuitability of some of the men commissioned.

Known individual injustices allowed to occur to certain hospitals, medical schools and communities.

The formation of the Volunteer Medical Service Corps intended to receive a large number of men who for sufficient reasons are ineligible for the Medical Reserve Corps.

Suppose that the medical profession of this State decided to follow the precedent set by the British medical profession and to set an example to the profession of all our other United States by accepting and declaring for the principle of universal service in time of war and offering—as a body—their individual services to the Government upon an approved plan asking that a selection be authorized from their members of those for service in the army and those for service at home.

Could this in any sense be called conscription if the request were granted and the selection made? On the contrary it could only be termed mass volunteering, an act of the most intelligent voluntary patriotism. An act which could not fail to excite the admiration and incite the emulation of the other states. For if it is admirable that one out of every six doctors in the United States has offered his services to the Government, would it not be still more admirable if the other five resolved to join him in that offer? And if the selection of 20,000 men made from the 25,000 who offered has been in some degree unsatisfactory, would it not stand a three times better chance of satisfactoriness if it could be made from the 75,000 who are available for such service in the whole United States?

Mass volunteering of the entire profession with selective draft of those fittest for army service based upon a classification with stated exemptions is the rational system to be desired in choosing the Medical Officers responsible for the care of our troops in war.

Is it too much to hope that the medical profession of this state and of other great states will soon resolve to declare their belief in the principle of universal service in time of war for the medical profession and for others and will set a brave and admirable example by offering—as a body—their individual services to the nation in its need?

## BROOKLYN AND THE MEDICAL OFFICERS RESERVE CORPS

To the Navy Brooklyn has furnished a small proportion of its finest medical men. So have other cities with Navy Yards, such as Philadelphia and Boston. Brooklyn has contributed doctors for the Regular Army and the National Guard, so have other cities of the country, therefore, except for the Navy volunteers, comparison with all other cities is a fair one.

In a list of 111 cities Brooklyn ranks as 88th, while the rest of New York ranks as 39th. Among recommendations for the M O R C the proportion of our medical population recommended for commissions is (Dec 1st), 104 per cent, Manhattan's percentage is, 163 per cent, There are towns as high as 333 per cent, a considerable number running over 20 per cent.

Of the towns on the above list 17 per cent have had recommended for commissions, among their medical population, 20 per cent. Among 13 cities having 1,100 doctors, they all run above 14 per cent except Los Angeles (with 1,248 doctors), 85 per cent, Brooklyn (with 2,214 doctors), 105 per cent, Boston (with 2,018 doctors), 115 per cent, New York, exclusive of Brooklyn (6,185 doctors), 165 per cent, Chicago (5,021 doctors), 142 per cent, Philadelphia (with 3,427 doctors), 199 per cent, Washington (1,482 doctors), 198 per cent, San Francisco (1,239 doctors), 167 per cent, Pittsburgh (1,154 doctors), 18 per cent.

Brooklyn has one doctor to every 860 population, Philadelphia has 1 to 500.

In most counties of New York State there is one doctor to 700. If it be said that Brooklyn's proportion of aliens (80 per cent of its population either foreign born or born of foreign parents) might bring about the result of its low percentage, comparison might be made with St. Louis which has 16 per cent of its doctors recommended.

The alien population of Greater New York is 24 per cent, of Manhattan alone it is 31 per cent. The alien population of New York, exclusive of Brooklyn but including Richmond, Bronx and Queens, practically is 20 per cent, Richmond is 14 per cent, Queens is 11 per cent, Bronx is 20 per cent.

The foreign born doctors of New York State are 20 per cent, the same as Brooklyn's general foreign born population rate.

New York State as a whole has contributed, with 15,670 doctors, 144 per cent, Buffalo shows, 87 per cent, Rochester, 8 per cent, Utica, 73 per cent.

It is evident that the smaller towns and country districts have done their duty nobly to offset such cities as Brooklyn, Rochester, Buffalo, and Utica.

Brooklyn with its 241 recommendations for commissions has therefore nearly 100 men short of the quota of 15 per cent which was asked for. A study of the list shows that a large number of our men are of draft age and therefore would have been put in camps in the line had they not volunteered. Among our surgeons, the chairman of the County Committee says that in conference with the State Committee, he found, in November, no class A surgeons from Brooklyn in the Army. The Surgeon General's office calls a class A surgeon a chief of service in a high grade hospital a good executive and teacher. It must be remembered that the Kings County Unit and one or two other distinguished surgeons are not yet on active duty.

### DATA

The New York census of its medical men might well be taken as a fair indication of conditions in the larger states, states that boast great cities and admit a large alien element. Its medical population figures as more

than one-tenth of the medical population of the United States.

The American Medical Association Directory of 145,241 includes doctors of all ages, those retired and those not in practice, and some who have passed away. Our census shows an excess in the American Medical Association Directory figure (15,670) over the actual corrected number of doctors in practice in New York State an excess of 13 per cent.

Taking the doctors' reports of themselves we find as follows, leaving out overlapping of disqualifications.

Females, 3 per cent. Men above 55 (between 55 and 64 very few men are found to be effective), 9 per cent, physically unfit, by their own statement, 17 per cent, aliens (mostly from Canada and Italy, 15. New York City is 80 per cent alien and children of aliens. (New York State doctors are 20 per cent naturalized), 15 per cent, scattered rural communities excludes 1 per cent but taking total in whole state 4 per cent are in such communities, dependents having excessive number, that is four or more who are 80 per cent dependent, 4 per cent, with three or more who are 80 per cent dependent, 10 per cent, men in important health board positions and hospital superintendents excludes, 8 per cent. As one-third of our New York State men hold hospital positions (still another third have had hospital training) from the above 40 per cent let us take further an estimated number of those holding hospital positions and let us say one-half can be spared for the war, to wit, 15 per cent. Remainder available among our medical population, 40 per cent.

Let us say we have not allowed enough for hospitals and not freed enough because of dependents and call those available 1 in 5, 20 per cent.

This then shows how the profession can afford 21,000 doctors for an army of 2,300,000, or 1 in 7.

## Notes to Members

The attention of the members of the Medical Society of the State of New York is called to page 117 of this JOURNAL on which will be found a list of bills introduced into the State Legislature, which if allowed to pass will be deleterious to the medical profession. Members are requested to write at once to their Senators and Assemblymen in opposition to these bills.

Members of the Medical Society of the State of New York in the service of their country are requested to send their addresses to the State Society office, 17 West 43d Street, New York City, so that the JOURNAL program of the coming Annual Meeting, and other matters of interest may be forwarded to them.

## Women's Medical Society of New York

The Annual Meeting of the Women's Medical Society of New York State will be held Monday, May 20, 1918, at The Ten Eyck Hotel, Albany, N. Y. An interesting and instructive program has been arranged for the morning and afternoon sessions while the annual dinner will take place that night at the same hotel.

It is hoped that most of the members will be able to arrange to stay for the meetings of the Medical Society of the State of New York which will be held in Albany at the same date.

## Medical Society of the State of New York

### County Societies

#### MEDICAL SOCIETY OF THE COUNTY OF ALBANY

REGULAR MONTHLY MEETING ALBANY

Thursday January 31 1918

The meeting was called to order in the County Court House by the President Dr Howard E Lomax.

Reading of the minutes of the December Meeting by the Secretary Dr Haswell.

Dr Arthur Bedell on a question for information demanded to know by what right or authority the secretary sent a copy of the minutes to the State Society for publication in the journal before they had been approved. The secretary replied that he believed it was customary for county societies to send their reports immediately to the journal as the interval of a month would render the report stale as a news item. The president ruled that to obviate further difficulty in this matter that the minutes would be read and approved just prior to adjournment of each meeting. The minutes of the December meeting were then approved.

The following Honor Roll of those in military service was then read:

William D Allen Erastus Corning Frederick Crouse Albert M Dickinson Joseph L Donhauser Malcolm Douglas Edwin L Draper Arthur W Elting Emanuel M Freund Nelson K Fromm Louis H Gause Henry Gillen L Whittington Gorham Philip C Hacker Eugene E Hinman Clinton B Hawk John E Heslin Thos W Holmes William P Howard Frank H Hurst Thomas W Jenkins Harry V Judge James M Keeling William G Keens Joseph A Lantian H Judson Lipes Howard F Lomax Andrew MacFarlane James E Maloney Clarence E Mullens Joseph P O'Brien George W Papen Jr George B Randall Henry L K Shaw John F Southwell James Vander Veer.

A service flag containing thirty six stars was presented by the President.

In accordance with the motion made at the Special Annual Meeting held December 14 1917 to postpone the election of delegates until the January meeting the President declared that nominations for election of delegates to the State Society were in order.

Dr Stapleton nominated Dr J L Bendell.

Dr Worrell nominated Dr Frederick Myers.

Dr Monnt nominated Dr Arthur Root.

There being no further nominations the Chair declared nominations closed.

Moved that the secretary cast one ballot. The Secretary having cast the ballot the Chair declared that Drs Bendell Myers and Root had been duly elected delegates to the annual meeting of the State Society for 1918.

The president then declared that nominations for alternates were in order.

Dr Classen nominated Dr Percival W Harrig Dr Worth nominated Dr Louis LeBrun and Dr Kinne nominated Dr Edwin W Hannock.

There being no further nominations the Chair declared the nominations closed.

On motion of Dr H F Mereness it was voted that the secretary cast one ballot.

The Secretary having cast the ballot the Chair declared that Drs Harrig LeBrun and Hannock had been duly elected as alternate delegates to the State Society for 1918.

Dr J Howard Brainin brought up the question of distribution of antipneumococci serum by the State Health Department.

It was voted that the question of the distribution of antipneumococci serum of the State Health Department be referred to the Public Health Committee for investigation.

Dr Orvis A Brennstuhl introduced the following resolution:

"WHEREAS the policy of the Medical Society of the County of Albany in establishing a dictatorship and jurisdiction over its members regarding all matters of medical interest for newspaper publication has provoked considerable dissatisfaction on the part of many, therefore

"BE IT RESOLVED That the Medical Society of the County of Albany abolish its policy of censoring and repressing the right of the free speech of its members through the public press.

Dr James F Rooney objected on the grounds that it was contrary to the By Laws. The Chair ruled the resolution out of order.

On motion of Dr J F Rooney it was voted that the Society continue to remit the dues of Dr Thornton K Perry and Samuel J Morrow and pay the amount per capita of the State assessment to the treasurer of the State Society.

Dr Harry Rulison on a question of information desired to know if the Comitua Minora appropriated any money for any purpose.

The Chair informed him that the Comitua Minora had voted to resume the contract for the County Society with the Albany Medical Annals for the publication of its minutes.

Dr J F Rooney stated that he doubted if the Comitua Minora had the right to expend the funds of the society without a vote.

A discussion followed as to the extent of the powers of the Comitua Minora.

It was voted that the question of entering into a contract with the Albany Medical Annals be laid on the table pending investigation of the Comitua Minora's authority and in the meantime that no contract shall be made with the Annals.

The President announced the appointment of the following committees:

Legislative A C Worth Jr C K Winne Jr,

F C Curtis

Publication H E Lomax, J L Bendell H E

Mereness

Public Health C W L Hacker C P McCord A Sautter

Milk Commission C W L Hacker C P McCord A Sautter E Kellert, H Rulison J F Miller ex officio member

#### SCIENTIFIC PROGRAM

Tuberculosis Examinations in the Army Nelson K. Fromm M D Captain M R C

Medical Inspection in the Schools Clinton P McCord M D Health Inspector of Schools

Minutes of the meeting were read and approved and the meeting adjourned at 11.20 P M

#### MEDICAL SOCIETY OF THE COUNTY OF ULSTER

ANNUAL MEETING DECEMBER 12 1917

The following officers were elected for the coming year: President James Robert Nelson Kingston Vice President John R Gillett Kingston Secretary Orlando DuB Ingrassi Kingston Treasurer E C Norwood Kingston Censors Alexander A Stern Walter D Hasbrouck Aden C Gites William J O Leary Luther Emerick Delegate to State Society Henry Van Hoevenberg.

The President appointed the following Legislative Committee: Alexander A Stern Chairman Elbert H Loughran Mark O Merritt

Committee on Public Health Adelbert H Mumbert Chairman Cornelius V Hasbrouck Frank L Eastman

## RENSSELAIR COUNTY MEDICAL SOCIETY

REGULAR MONTHLY MEETING, TROY, N Y

Wednesday, February 13, 1918

The meeting was called to order at the County Court House by the President, Dr Thurman A Hull Thirty members were present

The minutes of the preceding meeting were read and approved

A communication from the State Secretary regarding the extra professional income tax on over \$6,000 per year and on incomes from labor and not investments was read It was referred to the Committee on Legislation

A communication was received from the Albany Reporting Company No action taken

The Treasurer, Dr Benson, spoke of the promptness with which the members of the Society paid their dues, placing Rensselaer County on the honor list of the State Society

Dr Gordimer called the attention of the Society to a bill in the Legislature to prevent experimentation on lower animals Dr Gordimer felt that the bill should be killed and that the Society should take action against it It was referred to the attention of the Committee on Legislation

Dr Rhoda L Howard was proposed for membership by Dr J B Harvie

## SCIENTIFIC PROGRAM

"Some Observations on Operative Treatment of Inguinal Hernia," by Emmott Howd, M D, Troy, discussion by David W Houston, M D, Troy

"Angina Pectoris," by Hermon C Gordimer, M D, Troy, discussed by Drs Michael Keenan, John B Harvie, David W Houston, William Kirk, Jr, Henry F Albrecht, James H Donnelly

The papers of the evening were complete and instructive The discussion on Angina Pectoris was thorough and interesting

## RICHMOND COUNTY MEDICAL SOCIETY

REGULAR MEETING, NEW BRIGHTON

Wednesday, February 13, 1918

The meeting was called to order in the Staten Island Academy by the President, Dr John D Lucey

Present Drs Coonley, Mord, Catalano, MacGuire, Wisely Krueger, Janeway, Schwerd, Washington, Lucey, Johnston, Ware, Donovan, Gootenberg, and Dr Josephine Neal, of Manhattan

The minutes of the previous meeting in January were read and approved

Dr Charles Rieger of West New Brighton was elected to membership

Dr Frederick Coonley, Chairman of the Committee on Legislation reported favorably on keeping advised as to legislation at Albany during the present year

A motion was regularly made and unanimously carried that the Secretary communicate with Health Commissioner Dr J Lewis Amster, urging the appointment of Dr Edward D Wisely as Assistant Sanitary Superintendent for the Borough of Richmond

Dr Josephine Neal, of the Health Department, Borough of Manhattan, spoke on "Epidemic Cerebrospinal Meningitis," illustrating her lecture with lantern slides and specimens The subject was discussed and cases reported by Drs Coonley, Wisely, Washington and others

On motion a vote of thanks was extended to Dr Neal for her interesting and instructive paper The meeting then adjourned to the Staten Island Club where a collection was made

## Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers

TYPHOID FEVER, Considered as a Problem of Scientific Medicine, by FREDERICK P GAY, Prof Pathology in the Univ of California The Macmillan Co, N Y, 1918 Price, \$2 50

MANUAL OF SPLINTS AND APPLIANCES for the Medical Department of the United States Army Report of a Board convened for the purpose of standardizing certain Medical Department supplies Lieut-Col WILLIAM L KELLER, M C, Major ROBERT B OSGOOD, M R C, Major ALEXANDER LAMBERT, M R C, Major JOSEPH A BLAKE, M R C, Capt W S BAER, M R C, and Capt NATHANIEL ALLISON, M R C Oxford Univ Press, American Branch, 35 West 32d St, New York, London, Toronto, Melbourne and Bombay 1917 Price, 75 cents

TUMORS OF THE NERVUS ACUSTICUS AND THE SYNDROME OF THE CEREBELOPONTILE ANGLE By Harvey Cushing, M D, Professor of Surgery at Harvard University Octavo of 296 pages with 262 illustrations Philadelphia and London W B Saunders Company, 1917 Cloth, \$5 00 net

ESSENTIALS OF PRESCRIPTION WRITING By CARY EGGLESTON, M D Instructor in Pharmacology, Cornell University Medical College, New York City Second Edition Reset 32mo of 134 pages Philadelphia and London W B Saunders Company, 1917 Cloth, \$1 25 net

A CLINICAL MANUAL OF MENTAL DISEASES By FRANCIS X DIERCKM, M D, Ph D, Professor of Nervous and Mental Diseases, Jefferson Medical College, Philadelphia Second Edition Revised Octavo of 497 pages Philadelphia and London W B Saunders Company, 1917 Cloth, \$3 50 net

AMERICAN ADDRESSES ON WAR SURGERY By SIR BRUCE KELEY MOYNIHAN, C B Temporary Colonel, A M S, Consulting Surgeon, Northern Command 12mo of 143 pages Philadelphia and London W B Saunders Company, 1917 Cloth, \$1 75 net

THE IMMEDIATE CARE OF THE INJURED By ALBERT S MORROW, A B, M D, Clinical Professor of Surgery in the N Y Polyclinic, Attd Surg to Workhouse Hospital and to the Central and Neurological Hospital, Major, Medical Dept Officers Reserve Corps of the U S Army Third edition thoroughly revised Philadelphia and London W B Saunders Co 1917

MATERIA MEDICA, PHARMACOLOGY, THERAPEUTICS AND PRESCRIPTION WRITING For Students and Practitioners By WALTER A BASTFED, Ph G, M D, Assistant Professor of Clinical Medicine Columbia University Second edition, reset Octavo of 654 pages Illustrated Philadelphia and London W B Saunders Company, 1918 Cloth, \$4 00 net

A PRACTICAL TEXT-BOOK OF INFECTION, IMMUNITY AND SPECIFIC THERAPY with special reference to immunologic technic By JOHN A KOLMER, M D, Dr PH, M Sc Assistant Professor of Experimental Pathology, University of Pennsylvania, with an introduction by ALLEN J SMITH, M D Professor of Pathology, University of Pennsylvania Second edition thoroughly revised Octavo of 978 pages with 147 original illustrations, 46 in colors Philadelphia and London W B Saunders Company, 1917 Cloth, \$7 00 net, Half Morocco, \$8 50

**MILITARY ORTHOPAEDIC SURGERY** Prepared by the Orthopaedic Council (Medical War Manual No 4) Illustrated Philadelphia & New York Lea & Febiger, 1918 240 xxvii pp 16mo Price \$1.50

**BLOOD TRANSFUSION HEMORRHAGE AND THE ANAEMIAS** By BERTRAM M BERNHEIM AB MD FACC Instructing Clinical Surgery Johns Hopkins University, Captain M O R C U S A Author of Surgery of the Vascular System Philadelphia and London J B Lippincott Company Price \$4.00

**THE SPLEEN AND ANAEMIA** Experimental and Clinical Studies by RICHARD MILLS PEARCE MD ScD Professor Research Medicine with the assistance of EDWARD BELL KRUMHOLTZ MD, PhD Assistant Professor Research Medicine and CHARLES HARRISON TRAZIER MD ScD Professor Clinical Surgery University Pennsylvania 16 illustrations color and black and white Philadelphia and London J B Lippincott Company Price \$5.00

## Book Reviews

**MILITARY OPHTHALMIC SURGERY** By ALLEN GREENWOOD MD Major, M R C U S A Including a Chapter on Trichoma and Other Contagious Conjunctival Diseases By G E DE SCHWENITZ MD Major M R C U S A and a Chapter on Ocular Malingering By WALTER R PARKER MD Major M R C U S A (Medical War Manual No 3) Illustrated Phila and New York Lea & Febiger 1917 115 pp 16 mo \$1.50

The first chapter of about 50 pages considers the diagnosis and surgical treatment of injuries of the eye ball and adjacent structures. This chapter was written by Major Allen Greenwood who spent two seasons with the Harvard Unit British Expeditionary Force in France. This valuable experience eminently qualified the author for writing upon the subject of Military Ophthalmic Surgery.

Major George L de Schweinitz is the author of the second chapter which treats of the more common types of conjunctivitis occurring in military service. The various forms of trichoma are clearly and carefully explained. A number of colored plates materially aid the student in getting definite ideas of the subject.

The final chapter by Major Walter R Parker is a practical compendium of up to date methods used in the examination of eyes of suspected malingerers. This section of the book will be of help to those who are serving on Medical Advisory Boards. This Manual puts in tabloid form the essentials of what a military surgeon should know about the eye. J W I

**THE TREATMENT OF INFANTILE PARALYSIS** Second Edition By ROBERT W LOVETT MD P Blakiston's Son & Co, Phila 1917 \$1.75

Seldom has the publication of a medical book been more opportune than was the appearance of the first edition of this work, in the summer of 1916. Though at that time physicians and boards of health were more interested in the question of the control of a serious epidemic many were far sighted enough to realize that the victims who survived the acute stage would need long orthopaedic care. At that moment this book appeared. In well classified form it collected the accumulated work of orthopaedic surgeons and put proper emphasis on the treatment of the important convalescent stage. If the author has assumed for himself rather too much of the responsibility of the books teachings he has paid the price by being obliged to take the brunt of much adverse criticism from that branch of the medical profession which clings to the prolonged use of electricity and minimizes the deforming effect of this disease.

In general plan in form of publication in illustrations and in much of the text the second edition is similar to the first. But since the first issue the author has had the advantage of greatly increased personal experience with earlier cases and the study of reports of the epidemic of 1916 and the greatest value of the second edition lies in the careful tabulation of statistics of the incidence of this disease. Although in no sense a new subject by emphasizing it and by detailing methods the author again gives prominence to the value of muscle training. In discussing operative procedure the second edition is an advance on the first in that it recognizes the ripper experience of the profession and better weighs the merits of new methods. WALTER TRUSLOW

**DISEASES OF THE SKIN THEIR PATHOLOGY AND TREATMENT** By MILTON B HARTZELL A M, MD, LL D Phila and London J B Lippincott Co 1917 Illustrated 753 pp 8vo Cloth, \$7.00

This latest work on dermatology has many points that makes it an exceedingly valuable addition to our text books.

The author has carefully compiled the best from the writings of others and added his own views and conclusions gained by a clear sighted and scientific comprehension of the subject.

He has very wisely omitted discussions of the fads and fancies that so often litter up the pages of textbooks on special subjects.

His opinion of the newer methods of treatment as for instance vaccine and radiotherapy are so rational and conservative that they will prove of great value to the general practitioner.

The subject of pathology is extensively elaborated and expressed in such a lucid manner that anyone can gain a clear understanding of this most difficult and necessary foundation for the successful study of diseases of the skin.

In the parts devoted to treatment the authors long and successful practice of dermatology added to his extensive knowledge of general medicine enables him to speak with certainty and authority as to the best therapeutic methods and not confuse the reader with discussions of remedies that are of ephemeral or uncertain value.

The illustrations are from the authors own collection and serve to explain the text in a most vivid manner.

This new book of Professor Hartzell is a valuable addition to the already overcrowded list of treatises on skin diseases. J M W

**LOCOMOTOR ATAXIA (FABES DORSALIS)** An Introduction to the Study and Treatment of Nervous Diseases for Students and Practitioners. By WILLIAM J M A MALONEY MD (Edin) N Y and Lond D Appleton & Co 1918 Illustrated 299 pp 8vo

This volume of 299 pages is a complete discussion of locomotor ataxia its cause diagnosis and treatment.

The book is divided into fifteen chapters a full bibliography and index.

Special emphasis is laid upon treatment first the treatment of the cause syphilis second the care of the patient himself and third the prevention of the tabetic mental depression that so often is a sequel of this disease.

The work is comprehensively written and should prove instructive to anyone reading it. J

**MEDICAL OPHTHALMOLOGY** By ARNOLD KNAPP MD Professor of Ophthalmology Columbia University, Executive Surgeon Herman Knapp Memorial Eye Hospital Phila P Blakiston's Son & Co 1918 Illustrated Price, \$4.00

Medical Ophthalmology by Arnold Knapp MD, is one of The System of Ophthalmic Practice, edited by Walter L Pyle A M, MD

The volume is well gotten up good paper excellent

type, large enough to be easily read, and clear cut so as not to tire

The author, as stated in his preface, has drawn upon the authorities of the world to so large an extent, that the work is really the last word in ophthalmology, as related to general diseases

The very thorough and extensive first part, entitled "Introductory Anatomy and Physiology with Topographical Diagnosis," is worthy of careful study, and should be read and reread by every one interested in eyes and related subjects, as it presents a most difficult and complicated subject, in a clear and concise manner

The book is one that reads so easily, that one is inclined to turn page after page, loath to stop, and yet, as a matter of fact, it is really a Reference Book and should be so treated

The subjects in the various parts are so happily arranged, that it is almost impossible to be disappointed in looking for any subject within the scope

The author has made the work cover, almost, if not quite, every disease in its relation to the eye, and in so thorough a manner, that little is left to be desired

Few indeed, must be the lesions, which are not here treated, which, in any way, could be traced to any eye complications

Another and not the least important, from a practical standpoint, in a Book of Reference, is the excellent "Table of Contents" which gives the contents of the fifteen parts, into which the work is grouped, in so admirable a manner, that it is very little trouble to locate any disease or structure, which may be desired to be found

We certainly have in this work, a very great addition to the literature of ophthalmology and its relation to general diseases

NELSON L. NORTH

**PRINCIPLES OF MENTAL HYGIENE** By WILLIAM ALLANSON WHITE, M.D., with an Introduction by SMITH ELY JELLIFFE, M.D., Ph.D., New York. The Macmillan Company, 1917. 323 pp. Cloth, \$2.00

This volume is one of a series of books recently published which try to extricate the more delicate workings of the mind. The subject is handled quite interestingly but like all of these works too much is left to conjecture. Although it is fair reading when one has completed the work and asks himself the question, "What new points have I gained?" he must acknowledge none at all. Like all this type of work it is full of repetition. It appeals to the unreal, abstract, and philosophical parts of humanity.

Speculative ideas about the criminal insane, feeble-minded, and such topics as "underlying concepts," "mental mechanisms," etc., are treated in chapters by themselves. A summary in conclusion is as complicated as the whole book. It hardly summarizes. It continues the same line of argument trying to prove or elucidate nothing but to simply state a few facts of philosophy.

The book is written especially for that type of introspective neurotic individual who craves for an understanding of his or her own condition. The reviewer believes that these books do not achieve the result for which they are written. The patient becomes more nervous, worries more over what they did not learn, and then reads more articles and books only to increase the mental civil-war.

This is only the viewpoint of one reviewer. There must be others who with the author believe that this type of reading matter has its place and does much good. Freud and his followers think it is highly scientific. As a work for light reading it is pleasant. The printing is good. The paper and binding are excellent.

SIEGFRIED BLOCK

**PHARMACOLOGY AND THERAPEUTICS**, for Students and Practitioners of Medicine, by HORATIO C. WOOD, JR., M.D., Professor Pharmacology and Therapeutics, University Pennsylvania. Second Vice-Chairman Committee Revision U.S. Pharmacopoeia. Second edition. Philadelphia and London, J. B. Lippincott Co., 1916. Price, \$4.00.

The second edition of this work follows the general plan of the first edition, which was excellent.

Probably no work on pharmacology connects the "theory of action" with the therapeutic application in a more effective manner than does this one, the elimination of multiple theories that have chiefly historic value, and an elaboration upon those actions that are accepted today as accounting for therapeutic effect, is a plan that appeals to those who have passed their college period and desire to be informed about the present day status of pharmacologic knowledge.

Those drugs that have recognized action are considered pharmacologically and therapeutically. From a pharmacologic point of view the statements of the author are in accord with modern conclusions, modified, of course, to agree with the author's ideas, but presented always in a scientific and scholarly manner. In addition, the statements are brief and conclusive—almost dogmatic at times, but ample and authoritative. These features are conspicuous in the chapter on Cardiac Stimulants—a chapter that is usually alarmingly verbose. The therapeutic consideration accorded the several drugs is sufficient and illuminating. Here the author excels, brevity, utility and an authoritative style conveys all that is worth while in the therapeutic application of pharmacologic knowledge.

As a single volume "Practical" pharmacology this work is surpassing. It could well be dominated the "Practitioner's" pharmacology, yet the student would prefer it because of its brevity, its sufficiency and its completeness.

M. F. DEL

**CONSTIPATION, OBSTIPATION AND INTESTINAL STASIS**, by SAMUEL GOODWIN GANT, M.D., LL.D., Professor Diseases Colon, Sigmoid Flexure, Rectum and Anus, N.Y. Post-Graduate Medical School and Hosp. Second edition, enlarged. Octavo of 584 pages, with 258 illustrations. Philadelphia and London, W. B. Saunders Company, 1916. Cloth, \$6.00 net, Half Morocco, \$7.50 net.

This is the second edition of this work and has been almost completely rewritten to include the work done since the publication of the first edition in 1909. The author is an authority on intestinal conditions and it is a pleasant surprise to find that he is not in accord with the recent wave of surgical operations for intestinal stasis and other forms of constipation. He dwells at length and with emphasis upon physical therapeutic measures, diet regulation, rational use of laxatives and purgatives, and advises, where feasible, the conservative type of operation. He considers that constipation or obstipation may be the cause as well as the result of intestinal stasis, and further has found that defects of the nature of Lane's kinks may exist in health without symptoms and that radiography frequently shows incompetence of the ileo-cecal valve in patients not suffering from the supposed symptoms of such incompetence.

The work is set up in an attractive way, well bound and of such a quality of paper as to show off to best advantage the many beautiful original illustrations. The opening chapters deal with the anatomy and physiology of the stomach and intestinal tract and then six full chapters are devoted to the etiology of chronic constipation. Then come chapters on symptoms and diagnosis, after which the author proceeds to treatment which he takes up in great detail especially hygienic, electrical, vibratory and dietetic methods and massage. After a formulary of prescriptions for constipation the

surgical methods are gone into and the various steps of operation are well illustrated and explained by photographs and drawings

The character of the work and the standing of its author in his chosen field merit its being accorded a place in medical classics

W H DONNELLY

**AMERICAN JOURNAL OF OPHTHALMOLOGY** Published monthly by The Ophthalmic Publishing Company 7 West Madison Street Chicago Annual subscription \$10.00 in advance

The first number of the New Series of the *American Journal of Ophthalmology* has just appeared. It is a new journal in the sense that it is a result of the merging of the following ophthalmological periodicals into this one publication: *American Journal of Ophthalmology*, *Annals of Ophthalmology*, *Ophthalmic Record*, *Revue de Ophthalmologie*, *Ophthalmology*, *Ophthalmic Literature*, and the *Ophthalmic Year Book*.

The consolidation has made possible an excellent contribution to the periodical literature of ophthalmology and is a credit to the American ophthalmology as well as American ophthalmologists.

The Editor Dr Edward Jackson, requires no introduction to literary workers in and readers of ophthalmological literature. His editorial work in this field has proved of inestimable value. The other members of the Editorial Staff are Dr Clarence Loeb, Associate Editor and Drs Adolf Alt, M Uribe-Troncoso, Meyer Wiener, Casey A Wood and Harry V Würdemann together with a list of collaborators from various parts of the world.

The arrangement of this first issue is as follows: Original Papers, Abstracts, Society Proceedings, Editorials, Book Notices, News Items, Index of Ophthalmic Literature, Digest of the Literature. It is well printed and illustrated and presents an excellent appearance. This journal will at once take its place amongst the foremost medical periodicals upon a special subject published in the English language.

**NEUROLOGICAL BULLETIN** Clinical Studies of Nervous and Mental Diseases in the Neurological Department of Columbia University. Editor in Chief Dr FREDERICK TILNEY. Volume 1 Number 1 January 1918. Published monthly by PAUL B HOEBER New York City. Subscription per year, \$3.00.

The first number of this new edition to neurological literature has made its appearance. This periodical is to be published monthly from the Neurological Department of Columbia University and is to be devoted largely to the presentation of cases selected from the weekly clinical conferences. Dr Frederick Tilney is the Editor in Chief and Dr Louis Caspary, Associate Editor, with the following Editorial Board: Drs S P Goodhart, F M Hallock, Randall Hoyt, C A McKendree, Michael Osnato, Oliver S Strong and I S Wechsler.

The list of contributors and their contributions in this first issue are as follows: Recurrence of an Extra medullary Tumor after an Interval of Eight Years by Adrian V S Lambert, 'Polio-myelitis with Prolonged Somnolence' by Frederick Tilney, A Discussion of the Subject of Aphasia with a Clinical Report of Three Cases by Michael Osnato, A Case Presenting the Thalamie Syndrome by S P Goodhart, Description of a Summary and Diagnosis Blank by O S Strong, A Case of Syringomyelia with a Differential Diagnosis by O S Strong, Autobiographic Account of a Case of Acromegaly with Gigantism in the Family by Morgan T Crist.

We congratulate editors and publishers upon the excellence of this publication from a medical literary as well as a typographical standpoint.

**A MANUAL OF ANATOMY** By HENRY C RADASCH, M.Sc., M.D. Assistant Professor of Histology and embryology in the Jefferson Medical College Philadelphia. Octavo of 489 pages with 329 illustrations. Philadelphia and London W B Saunders Company, 1917. Cloth, \$3.50 net.

This splendid volume is truly human anatomy boiled down with few facts lost in the process. The paper is good and the print easily readable. It is liberally illustrated with fine plates many from the wonderful work of Sobotta and McMurrich others from photographs all of them good. The bone descriptions are short and easily visualized and the joints are well cared for. The muscles are tersely treated but nevertheless sufficiently to get their action and nerve supply clearly, as well as their location. The author has written well of the blood vascular system his work on the heart and large vessels is worth attentive reading. The semi lunar valves of the aorta and pulmonary arteries are described under their respective vessels instead of with the ventricles and the pericardium is nicely depicted. The description of the arteries and veins is very clear. The illustrations here are artistic and original. Chapter V on the lymph vascular system is concise and yet gives a better grasp of this part of anatomy than some of the larger works. Chapter VII deals with the alimentary tract starting at the mouth and salivary glands and including the liver and pancreas. In this chapter the author has again put many valuable facts into small space and has dealt with the peritoneum in an understandable manner. The urinary system and male and female reproductive organs receive due attention while the short chapter on the ductless glands is a real treat. The eye and ear are well discussed for a book of this size and the author has truly saved the best for the last. The final one hundred and fourteen pages devoted to the brain and nervous system are well worth the price of this volume of modest size which can be read with profit by physicians as well as medical and premedical students.

THEODORE L VOSSEIER

**THE MODERN MILK PROBLEM IN SANITATION ECONOMICS AND AGRICULTURE**, by J SCOTT MACNUTT, lecturer on Public Health Service in the Massachusetts Institute of Technology, author of *A Manual for Health Officers*. The Macmillan Co. New York 1917. Price \$2.00.

This book of 250 pages is a very concise readable little book written with only one purpose that is as the title might imply 'the control of the milk supply from every angle economics field and laboratory'. The author is a devout advocate of pasteurization of milk and continually praises the system of Dr C E North. Believes reverently in methods rather than equipment and delights in telling of 'a cow stable in Maryland in which milk is regularly produced with less than 10,000 bacteria per cc. This barn is one in which the light is very deficient and the floors of wood'. The author should be congratulated for the manner in which he has presented his subject and as a reference work on milk it will prove to be invaluable. The author truly states certified milk established a standard which has been the ideal of the whole clean milk movement.

ALFRED BELL

**RACTURE OF THE LOWER EXTREMITY OR BASF OF THE RADIUS** By JIMMIS STEPHEN PILCHER, A.M. M.D. 111 D Philadelphia and London J B Lippincott Co. 1917. Price \$2.00.

This little contribution is made the subject of an excellent monograph. Fractures of the lower end of the radius have interested the doctor from the rise of his surgical horizon to the setting of a long and useful career. This fracture is one which is very commonly treated very badly. The need of such a treatise among recent graduates and practitioners who see these cases so frequently in dispensary and office practice is so

great that we hope this little volume will fall into their hands and enlighten them

Dr Pilcher tells us almost everything there is to tell about Colles' fractures (though he doesn't call it by that name). This little work he tells us embodies his studies from 1878 and represents the mature considerations of the last thirty-six years

The book is written in a discursive way and rambles along in an interesting manner. It gives us nothing new, but should be a highly prized little surgical gem which we should all have in our libraries, because it is written concerning a fracture of the greatest importance and one which is neglected the most and because it is written by the Dean of the surgical profession of Brooklyn to whom we offer our respect and admiration and love  
R H F

**THE CONTROL OF HUNGER IN HEALTH AND DISEASE** By ANTON JULIUS CARLSON, Ph D Professor of Physiology in the University of Chicago 319 pages The University of Chicago Press, Chicago, Ill, 1916 Price, \$2.00 net

This volume, as stated by its author, is "to be considered as the first rather than the final chapter on hunger control, and yet the most extensive work in this field to date." It is a summary of the results of four years of research, by Professor Carlson and his pupils, in the Hull Physiological Laboratory of the University of Chicago. Having been fortunate enough to discover a second Alexis St. Martin, in the person of a young man named Fred Vleck, who has for twenty years "fed himself through a permanent gastric fistula owing to complete closure of the esophagus, as a result of accidentally drinking a strong solution of caustic soda," and by new methods of studying the actions of the stomach in healthy men and animals, experiments were devised that have led to very important results. Professor Carlson claims to have demonstrated that "a certain type of contractions in the empty or nearly empty stomach gives rise to the sensation of hunger by stimulation of sensory nerves, not in the gastric mucosa, but in the sub-mucosa or muscularis. These hunger contractions of the empty stomach are primarily initiated in the stomach itself and are thus independent of motor impulses from the brain or spinal cord." In this last conclusion he differs from Pavlov, whose name, by the way, he has not Germanized, as so many American authors do, into Pawlow.

In several particulars Carlson's views differ from those hitherto held by many physiologists. He disagrees with Chittenden's statement that "the so-called cravings of appetite are largely artificial and mainly the result of habit." He tells us that in normal individuals "the gastric hunger periods begin as soon as the stomach is empty and continue (in the absence of inhibitory processes) as long as the stomach is empty, irrespective of the time of day or night, and without reference to the time the individual is accustomed to eat." A person who has acquired the habit of eating but twice instead of three times a day will eat more at a meal and thus prolong the time of emptying the stomach and the time for the appearance of the gastric contractions. These contractions, he holds, "have no relation to the actual need of the individual for food" under normal conditions. The demand of the body for food are gradual and continuous while the empty stomach and its contractions are periodic. Filling the stomach with indigestible materials can temporarily abolish hunger without supplying nourishment. Hunger is absent in fever when the body is starving. People accustomed to voluminous rations will remain hungry if fed with small amounts of substances having an equal or greater food value. The only condition that persistently parallels the hunger pangs is contraction of the stomach. The author however, distinguishes between hunger and appetite. He points out that palatable food can be eaten with enjoyment when there is no real hunger and that liquid food introduced into an empty stomach, by

the aid of a tube, may stop stomach contractions and thus stop hunger, "while the pleasant appetite complex is initiated or intensified."

His experimental results in the use upon his subjects of many kinds of bitter "tonics" will be something of a surprise to the older members of our profession. He assures us that "the bitters usually employed in therapeutics have no favorable action on the hunger mechanism." Another conclusion he has reached is that "smoking inhibits the gastric hunger contractions" and "even a brief period of smoking may suppress an entire hunger period." In respect to the effects of exercise upon hunger he states that walking does not inhibit it but running does and that too in proportion to the speed. He claims that the normal acidity of the gastric juice is 0.5 instead of 0.3 per cent, that entrance into the stomach of intestinal secretions reduces it ordinarily to about 0.25. Since no one has ever reported finding a stomach containing a gastric juice more strongly acid than 0.5 per cent he thinks that the symptoms attributed to hyper-chlorhydria and hyper-acidity need reconsideration.

Carlson's book is certainly a valuable addition to our knowledge of an exceedingly important subject and one that every up-to-date doctor should possess. It is impossible in a brief review to more than outline a few of its most striking conclusions. It must be read to be fully appreciated.  
R G E

**AMMUNITION FOR FINAL DRIVE ON BOOZE** By LOUIS ALBERT BANKS, D D 402 pages Price, \$1.50 net By mail, \$1.62 Funk & Wagnalls Co, 354-360 Fourth Avenue, New York City, 1917

The question of Prohibition is no longer a matter which can be brushed aside as unimportant and inconsequential. In the remarkable progress made in the temperance cause in recent years this problem has forced its way to the front and demanded the thought and consideration of leaders in political, social, professional and industrial circles. Without a doubt, the great world struggle now in progress has given added impetus to this question and taken it out of the realm of national affairs and made it an international problem.

In this book the author, a well-known temperance advocate, has brought together a great mass of the more recent facts against the liquor traffic. In the 402 pages comprising this volume the writer has compiled in handy form the strongest arguments and convincing testimonies of recognized lecturers and writers upon this topic. While the book will prove interesting to all who are in favor of prohibition it will be especially helpful and inspiring to those seeking the latest and best facts for speeches, debates, or literary work.

**HANDBOOK OF PRACTICAL TREATMENT** BY MANY WRITERS Edited by JOHN H. MUSSER, JR., B S, M D, Associate in Medicine, University of Pennsylvania, and THOMAS C. KELLY, A M, M D, Instructor in Medicine University of Pennsylvania. Volume IV and Desk Index. Philadelphia and London, W M Saunders Company, 1917 Price, \$7.00

This volume is published as a supplementary volume to the original three volumes of the "Handbook" and is designed to provide the original contributors with an opportunity to bring their therapeutics up to date. Several of these original writers have died and others were unable to undertake a revision of their articles, and the writers who replaced them have been invited to rewrite the articles completely in order to express their individual views.

This system of treatment is well known to the medical profession, and it need only be said that this, the fourth volume, is fully up to the high standard of the original work and that it has brought the treatment up to the date of its publication in April 1917.

Not only will it be an almost indispensable addition

to the libraries of those who possess the other three volumes of the system but even a single and separate work it will be of invaluable service to those in search of the newest scientific treatment. As an aid in the use of the complete work the publishers have issued a Desk Index.

W H DONNELLY

**PULMONARY TUBERCULOSIS** By MAURICE FISHBERG M.D. Clinical Professor of Tuberculosis University and Bellevue Hospital Medical College. Attending Physician Montefiore Home and Hospital for Chronic Diseases New York. Octavo 659 pages with 91 engravings and 18 plates. Cloth \$3.00 net. Lea & Febiger Publishers Philadelphia and New York 1916

This is a comprehensive review of modern thought on the ancient and most dread white plague. The profound erudition, wide clinical experience and simple clear language of the author make the book a splendid contribution to the study of pulmonary tuberculosis. The forty-one chapters and over six hundred pages of the book are full of instruction for the student as well as the general practitioner.

The chapters on Symptomatology and Diagnosis are very clear and thorough.

In his chapters on Pathology the author makes a sharp distinction between *infection* and *disease* or tuberculosis and phthisis. In the discussion of the clinical aspects of phthisis much stress is laid upon the constitutional symptoms.

The eighty odd illustrations are instructive and the general tone of the book is optimistic and helpful.

Too little stress is put on occupation as an etiological factor. The statistical part of the book is rather meagre. The chapter on Radiology could be amplified and the author here and there is at times too dogmatic and apt to pronounce *ex cathedra* judgments.

In the chapters on Therapeutics the author unduly minimizes the advantages of sanatorium treatment and in his advocacy of 'careful home treatment' which he says is productive or practically the same immediate and ultimate results as institutional treatment forgets that the ordinary home is no place for careful or scientific treatment and that the ideal would be that every patient should first undergo an educational training in an institution before a careful home treatment would be of value to him or his family.

The classification of the various conditions and stages of pulmonary tuberculosis is rather arbitrary and does not conform to any of the recognized standards of classification adopted by tuberculosis experts.

The chapters on Therapeutics on Tuberculosis of Children and Laryngeal Tuberculosis are rather superficial and inadequate.

On the whole however the book as previously stated is a splendid contribution to the subject of pulmonary tuberculosis and should be in the hands of every general practitioner.

G M P

**PAINLESS CHILD BIRTH EUTOXIA AND NITROUS OXIDE OXYGEN ANALGESIA** By CARL HENRY DAVIS A.B. M.D. Associate in Obstetrics and Gynecology Rush Medical College Chicago University. Forbes & Co Chicago 1916 Price \$1.00

This work sums up our knowledge on the use of nitrous oxide in obstetrics.

The writer of this critique is a firm believer in any thing that will relieve the pain and the subsequent nerve shock in severe labor. He does not believe with Davis however that the morphine scopolamine analgesia is

dangerous and still considers this the best first stage method.

The 'Twilight' and the nitrous oxide method as a matter of fact should never come into competition. The former should be used in the first and the latter in the second stage of labor.

The combination of these methods not only relieves or lessens the pains of childbirth but what is more important it reduces the number of difficult forceps deliveries and leaves the woman in better physical and mental condition to nurse her offspring.

**MODERN DIETETICS FEEDING THE SICK IN HOSPITAL AND HOME WITH SOME STUDIES ON FEEDING WELL PEOPLE** By LULU GRAVES Dietitian Lakeside Hospital Cleveland The Modern Hospital Publishing Co., 1917

This monograph is composed of papers which have been published in Modern Hospital and is prefaced by an introductory chapter by Professor Lafayette B. Mendel of Yale University.

While primarily intended to help in the dietetic work of hospitals and other institutions it will be found to contain valuable material for the private practitioner.

It begins with a chapter on the managing of the institution commissary taking up in order the food value of various food products milk and its modifications butter and its substitutes vegetables, legumes cereals fruits coffee tea, cocoa meats fish and oysters.

Then come chapters on special diets in disease the feeding of different classes of people the feeding of institutions and training school work in dietetics.

Finally the various foods and special diets are taken up with their caloric value and recipes for their preparation.

This presentation of foods and dishes in terms of calories is of great value and in keeping with the modern practice of caloric feeding and in fact, the work may be said to merit a place in the library of both hospital officers and practicing physicians.

W H DONNELLY

**THE FUNDS OCULI OF BIRDS ESPECIALLY AS VIEWED BY THE OPHTHALMOSCOPE A STUDY IN COMPARATIVE ANATOMY AND PHYSIOLOGY** BY CASEY ALBERT WOOD 145 drawings in the text, also 61 colored paintings prepared for this work by Arthur W. Head F.Z.S. London The Lakeside Press, Chicago 1917 Price \$15.00

This work in atlas form is an important contribution to the study of comparative ophthalmology. At the outset the author gives a summary of conclusions regarding his ophthalmoscopic examinations of many hundreds of species of birds. It was found that the fundi differed so widely it was frequently possible to recognize the species of bird by viewing its fundus oculi. Also it was found that domestication or prolonged captivity brings about abnormal changes in the eyeground.

Chapter IV treats of the anatomy and physiology of the avian fundus. A description is given of the pecten which is found in the eyes of all birds. This structure is supposed to protect the retina from the rays of the sun. Chapter VI states that atropin hemastropin etc., does not act as a mydriatic in a bird's eye. Reference is made to the possibility of hypnotizing birds in order to facilitate an ophthalmoscopic examination. An interesting and amusing description follows regarding experiences in hypnotizing a vigorous ostrich in California. After the bird had been thrown down and held the light from a kerosene lamp was thrown upon his dilated pupils for about five minutes and then he appeared as if in a trance. He remained quiet without being held during the examination which occupied some 20 or 30 minutes.

same way the citizen of New York, when he visits Albany will now feel a sense of pride that his capital city is so beautiful and well conducted. He will be proud of the stately buildings, the beautiful streets, and handsome churches. But he should remember that for many of these he is indebted to the public spirit and civic pride of the people of Albany, and Albany must be content to share with the people of the State this feeling of pride and proprietorship.

There are citizens of New York who seem to think that Albany subsists on its advantages as the State Capital. To such it will be a surprise to know that Albany is not only a manufacturing center, but a commercial center of unusual importance. Situated, as it is, at the virtual head of navigation on the Hudson River, it is also the terminus of the Erie and Champlain Barge Canals, with six railroads radiating from it to every part of the country. It thus has extraordinary shipping and commercial facilities and is the second largest express and third largest mail transfer point in the country.

Since the last meeting of the State Society in Albany the hotels have added immensely to their accommodations. It is an item of utmost importance to visiting members that there shall be adequate hotel accommodations in the Convention City. Albany can now accommodate all who come.

In view of the recent remarkable development of automobiles and good roads the importance of garage facilities has become very great. What has been said of the hotels is equally true of the garages.

In the absence of Dr. Samuel Lloyd in France, Dr. Thomas J. Harris, a veteran in program making, has consented to assume the duties of Acting Chairman of the Committee on Scientific Work. The program that has been prepared is right up to the highest standard of the State Society.

The Social Program is also up to the standard. In this time of war and stress it is felt that elaborate and expensive entertainments would not be appropriate. However, under the able chairmanship of Mrs. Edgar Vander

Veer, a Woman's Committee is making ample and satisfactory provision for the entertainment of the women who may attend. Upon her committee are the wife of the Governor of New York and the leading women of Albany. It is hoped that attending members will do this year, as they have seemed more and more inclined to do in recent years, and bring with them their wives and daughters.

The sanitary conditions of Albany are unusually perfect. Eighteen years ago a filtration plant was established for the water supply. There was an immediate reduction in the mortality rate of typhoid of 75 per cent. During these years *the average number of deaths from typhoid has been 18*. During the past year it was eight. The milk supply is safe-guarded by strict inspection made mandatory by state law. Visiting members may drink water and milk as freely as they may wish without the fear of coming down with typhoid the first week in June.

An intercepting sewer and modern sewage disposal plant is under process of construction. This will eliminate pollution of the Hudson River, to the advantage of Albany and every town below it. In this respect, Albany is a shining example for every city of the country situated on a river bank.

The Albany Medical College was organized in 1838. It is the second oldest medical school in the state and has graduated nearly three thousand physicians and has numbered upon a faculty many of the great names of American medicine.

Notwithstanding war conditions, there is ample reason to expect a large and satisfactory meeting. During the fall, the District Branch meetings, though not quite as large as in the year before, were in almost every instance larger than had been expected by the officers. The annual meeting in May is certainly going to be largely attended.

Since the Civil War there has been no time when it was more important for professional and public good that our great society should be held together for vigorous and aggressive work and it should be loyally supported by its membership.



The breasts are two glands situated on either side of the sternum on the anterior aspect of the thorax. They are composed of the following elements:

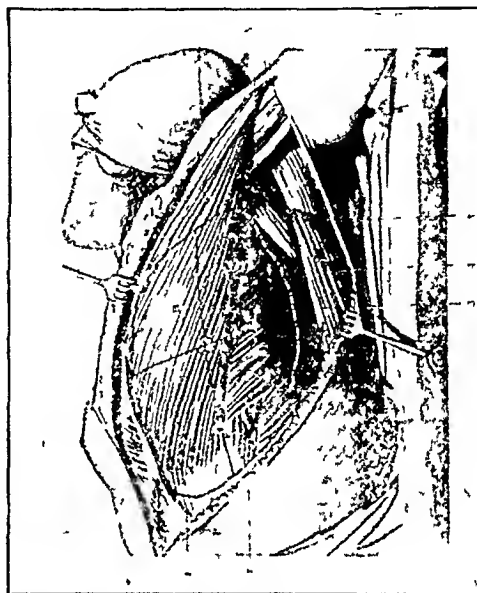
- 1 Parenchyma
- 2 Stroma, or connective tissue frame-work
- 3 Fat, and of course, lymphatics, blood vessels, nerves, etc. The relative proportion of these elements may vary according to the individual, according to her age, and according to whether or not the breast is functioning. We shall assume for our description the gland of an adult nullipara. The breast consists of (a) *Corpus Mammæ*, (b) *Peripheral processes*. These peripheral processes extend in every direction. During the resting period they are insignificant, but during pregnancy and during the period of lactation they become fully developed, and compose a very important part of the organ.

Of course, these peripheral processes vary greatly in different individuals. There are three or four that extend toward the sternum, there is one that extends from the upper and outer quadrant of the gland along the axillary fold. This is usually the largest of them and has been called the *mammary tail*. Sometimes it develops in such a manner as to appear like a separate (supplementary) gland, but it is usually truly a peripheral process. A knowledge of these peripheral processes is of the utmost importance to the surgeon, and Stiles' description of them had a very great influence in developing the radical operation. These various processes are connected with one another toward their extremities by smaller processes which thus form a network. In the quiescent state these meshes are filled with fat lobules, but when evolution and development of the gland during pregnancy take place, the parenchyma increases at the expense of the fat which is absorbed, so these peripheral processes add greatly to the size of the organ.

The *corpus mammæ* is variable in size, but in general terms it may be stated to extend from the second or third rib down to the sixth costal cartilage. At the level with the nipple it is about five inches in width, extending outward from near the border of the sternum. Two-thirds of the body lie over the *pectoralis major* muscle. The outer and lower third lies over the *seratus magnus* muscle and some of the digitations of the *external oblique*.

The two breasts are never symmetrical in size and after the first pregnancy they never return to the virgin condition. With each evolution the structures of the fibrous frame work become stretched, its spaces become enlarged and the breasts become more and more pendulous so that a deep sulcus is formed under the lower margin. (The virgin breasts are

compact and pyramidal, and have no such sulcus). Depending upon the individual, there is more or less over-production of fat. Sometimes the breasts become very large and prominent, but except in cases of true hypertrophy this is not due to an increase in glandular structure but of lobules of fat. Of course, when senile involution takes place the breasts become atrophic and shrunken in various degrees, according to the individual case.



(Harold Stiles) Diagram showing dimensions of breast and relations to muscles

**Nerves**—The nerves of the breast are derived from the fourth, fifth and sixth intercostal nerves. Sympathetic filaments from the thoracic cord pass to the breast along the intercostal nerves.

The arteries supplying the mammary gland are derived from the long thoracic branches of the axillary artery, and branches from the intercostal arteries and from numerous perforating branches of the internal mammary artery.

The veins form an anastomotic circle around the base of the nipple, called the *plexus of Haller*. The veins of the breast empty into the axillary and internal mammary veins.

In performing a modern operation for cancer of the breast, the surgeon is not much concerned with the intimate bloodvessels of the gland itself, the bloodvessels he is most interested in are those which supply the region and which are ligated and divided at their origin as near the axillary artery as possible. These are the superior thoracic, the acromial thoracic, the alar thoracic, and the sub-scapular. The perforating branches of the internal mammary give one but little concern, and are not divided until the final ablation takes place.

**Lymphatics**—The lymphatics of the breast are too small to permit of dissection or of demonstration in their normal condition, and they are usually collapsed so they cannot be satisfactorily studied unless they are artificially or naturally injected. Langhans succeeded in injecting the lymphatics by means of a puncture in the interlobular connective tissue, by this means he distended a system of lymph channels forming a network in the stroma and enclosing one or more ultimate gland lobules in each mesh. This network receives lymph from the spaces between the acini and is continuous with lymphatics occupying the adventitious walls of the ducts which run parallel with these ducts toward the areola where they enter a plexus of larger lymphatics in the loose connective tissue surrounding the ampullæ or sinuses. This forms the sub-areola plexus of Sappey which communicates freely with the lymphatics of the nipple and of the surrounding skin. Much useful information as to the anatomical arrangement of the lymphatics has been gained by making a special study of these channels in cancer cases. Often one can gain a more satisfactory idea of the structure and arrangement in this way than by means of artificial injection. It was this kind of investigation which made the work of Handley of such great value.

Beside the lymphatics which are closely related to the parenchyma (the peri-lobular and peri-ductal lymphatics) there are others which are more closely associated in their distribution with the blood vessels. These latter freely anastomose with the former. The larger blood-vessels are accompanied by two or more lymphatics occupying their sheaths.

As pointed out by Stiles, examination of a large number of breast cancers has shown the invasion of the lymphatic spaces by cancer cells, particularly in the following situations:

(A) The connective tissue processes radiating from the tumor into the surrounding breast, or into the circum-mammary fat.

(B) In breast tissue remote from, as well as close to the tumor.

(C) In the connective tissue septa which separate the circum-mammary fat lobules.

(D) In the ligaments of Cooper, where they even convey cancer cells to the corium, and in the retro-mammary tissue and pectoral fascia.

In the last named situation they are large and generally accompany the bloodvessels which pass to and from the deep surface of the gland. According to Sappey the lymphatics of the breast consist of

(A) A superficial or cutaneous set

(B) A deep or glandular set. He claims that all the trunks springing from the glandular system pass from the posterior surface and from the body of the gland toward the areola, where they form the sub-areola plexus which is made up of vessels of remarkably large size. From this sub-areola plexus pass two or three large trunks which empty themselves directly into the glands of the axilla.

Stiles does not agree with Sappey's contention that the two or three large trunks leading from the sub-areola plexus are the ultimate and only channels for the receipt of lymph from all parts of the gland.

According to Stiles, there are "Five sets of lymphatic vessels which communicate freely with one another

1 A superficial or cutaneous set including those of the nipple, areola, and surrounding skin

2 The sub-areola plexus of Sappey

3 The intra-mammary lymphatics

4 The lymphatics of the circum-mammary fat

5 The retro-mammary lymphatics

The cutaneous and intra-mammary lymphatics in part open into the sub-areola plexus which connects these two systems. The lymphatics of the circum-mammary fat constitute a part of the general superficial lymphatic system of the thorax. They represent on the one hand, the lymphatics of the true skin and on the other hand the efferent lymphatics from the anterior surface and circumference of the mamma. These lymphatics of the circum-mammary fat open into the larger and deeper lymphatics placed between the layers of the deep fascia. Lastly, from the lymphatics of the deep fascia large trunks pierce its deep surface and constitute the well defined vessels with thin but muscular walls which pass to the lymphatic glands as their efferent vessels. The retro-mammary lymphatics, including those of the pectoral fascia receive all the efferent mammary lymphatics which leave the posterior surface of the gland. In this way, therefore, the efferent lymphatics of the corpus mammae of the fat around it, and of the nipple, areola and skin over it, open either directly or indirectly into the lymphatics of the deep fascia which latter accompany the bloodvessels of the gland, pierce the deep fascia along with them, and so reach the lymphatic glands which lie in a group or chain alongside them. The lymphatics from the inner part of the mammae accompanying the perforating branches of the internal mammary artery to join the sternal glands placed along its trunk. The greater

number, however, accompany the mammary branches of the acromio-thoracic, the long thoracic, and the external mammary branches of the axillary artery to open into the axillary glands."

There is also a communication between the lymphatics of the two breasts through a median anastomosis of both the superficial and of the retromammary lymphatics. The main lymphatic trunks of the axilla run for the most part along the blood vessels.

The axillary glands after Quaine. "The Axillary glands are generally twelve or more, they vary much, however, in number as well as in their size in different individuals. From four to six are placed along the axillary vessels and receive the lymphatics which ascend from the limb, four or five small pectoral glands lie further forward on the serratus magnus near the long thoracic artery, at the lowest border of the pectoral muscles, and receive the lymphatics from the mammæ and front chest, while three or four sub-scapular glands are situated at the back of the axilla along the sub-scapular vessels, and are joined by the lymphatics from the back. One or two small infra-clavicular glands are also found immediately below the clavicle in the hollow between the pectoralis major and the deltoid muscles. They receive some lymphatics from outside the arm and shoulder and are connected above with the inferior cervical glands, below with the axillary glands. The efferent vessels of the axillary glands ascend with the sub-clavian vein, and form by their union in some cases a single trunk (axillary lymphatic trunk) in others two or three large vessels which terminate on the left side in the thoracic duct, and on the right side in the right lymphatic duct. Sometimes they open separately into the sub-clavian vein near its termination."

As a matter of fact, the description of these axillary glands as given in works on anatomy is neither accurate nor adequate from the standpoint of the surgeon. Stiles made a very illuminating study of this phase of the subject and pointed out the fact that in cancer cases one may find a great many more glands than the anatomies give account of, so that one may find twenty or thirty or even more. He showed that there are a great many glands so minute that they may be called latent until they spring into active existence, and he also showed that lobules of fat may often be transformed into lymphatic glands.

Before describing the minute structure of the breast, a word must be said about its life history, for this organ varies greatly in structure

and in function during different periods of life of the individual. Throughout life it is the subject of constantly recurring evolutions and involutions.



(Syms) Section through normal breast of still-born infant showing all the characteristics of an adult functioning breast.



(Syms) Section through normal lactating breast. Gland nodules everywhere and fully developed.



(Syms) Section through a normal adult inactive breast. Gland nodules few in number. Small in size.

At birth, strange to say, the breast is an active functioning gland, secreting milk. Within a few days, however, it relapses to the condition of a rudimentary organ, during childhood it simply grows as does the rest of the body, at puberty it takes on active but limited development, during adult life it changes but little until pregnancy occurs. It is only during the period of pregnancy that the gland becomes fully developed, and it is only during the period of lactation that the gland has an active function, and therefore a full development. After each lactation involution sets in and the gland returns to the resting state. After the menopause, the gland having ceased to have a use, a final involution sets in and the gland becomes atrophied in a manner peculiar to itself.

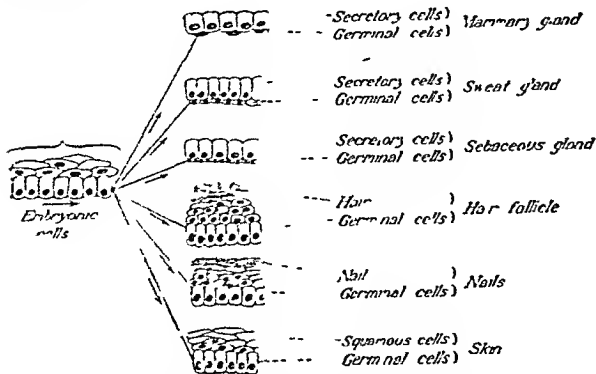
The breast is really an inverted portion of skin which has become highly differentiated into the formation of an active organ whose function is the secretion of milk. As this function is only called for after the completion of pregnancy the gland, naturally has a variable and might be said, transient existence.

Without going too deeply into the embryology of the breast, suffice it to say that the first anlage appears as a thickening of the narrow linear ectoderm which extends from the root of the anterior limb to the root of the posterior

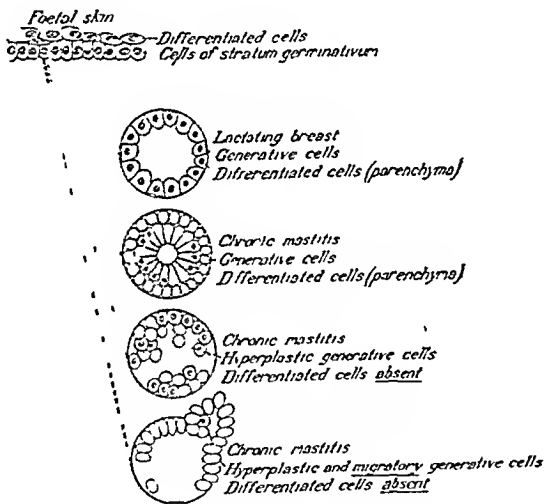
limb on each side of the body. In human embryos of 10 mm on either side of the trunk is an epithelial thickening which extends from the root of the anterior limb to the root of the posterior limb. This is the mammary strand. The middle of this strand is known as the mammary crest. Posteriorly the mammary crest becomes obliterated, fading into a mammary band which finally disappears in the caudo-cranial direction. The mammary crest becomes shortened into the shape of a club or nodule which is designated as the primitive mammary bud (in an embryo of 23 mm Bronha). The primitive mammary bud next plunges more deeply into the chorion which becomes condensed toward it in the form of a mesenchymatous nodule. The integument which surrounds the primitive mammary body undergoes at the same time a slight circular invagination which constitutes the anlage of the areola of the nipple. (Demonstrable in embryo at second month). Later the mammary body becomes enlarged, forming the glandular field (Huss). From its deep aspect (5th or 6th month) sprout 20 to 25 epithelial outgrowths which are cylindrical or pear-shaped terminating in a club shaped enlargement (anlage of milk ducts, Bronha). These gradually become provided with lumen. At this stage the proliferation of connective tissue which surrounds the mammary bud terminates in the elevation of a prominent anlage, namely, the nipple. The result is the formation of a gland of very irregular type, which strongly suggests the general morphology and structure of the sweat glands.

When finally evolved the breast consists of an organ composed of a delicate fibrous frame work whose loose meshes separate and support the various structures of the gland. Beginning at the nipple there are the orifices of from 12 to 20 or more milk ducts or channels. In the neighborhood of the areola, these channels are expanded into ampullæ or reservoirs (milk sinuses). These milk ducts divide dichotomously until they terminate in flask shaped extensions which constitute the acini or secretory part of the gland. This gland is made up of lobules which grouped together form lobes each series belonging to its own set and terminating in its own proper milk duct. The canals and the acini are surrounded by a definite basement membrane. On this membrane rest epithelial cells which are the true gland cells. In the larger ducts this epithelium is cylindrical but in the smaller ducts and acini it is cuboidal, and consists of a single layer. Besides these cuboidal epithelial cells there are to be found a few flattened cells between them and the basement membrane of irregular shape, and it is these latter cells which are the subject of a good deal of controversy, or at least

of a good deal of difference of opinion. According to some authorities these are the basket cells, and according to some they are connective tissue cells. According to others they are muscle cells derived from the minute blood vessels.



(William MacCarty) Diagram illustrating his theory concerning mammary gland cells



(William MacCarty) Diagram illustrating his hypothesis as to the differentiated cells, and the cells of the stratum germinativum

MacCarty of Rochester has very decided opinions regarding these cells. He claims that they are really undifferentiated epithelial cells analogous to the basal cells of the skin. Under certain conditions, he claims, these cells take on a form of hyperplasia, displacing and replacing the true epithelial cells of the gland, and that it is these cells which become the cancer cells when they take on a form of migratory hyperplasia.

Of course, besides the ducts and their acini (the parenchyma of the gland), there are the nerves, lymphatics, and the minute bloodvessels surrounding the ducts and the acini, and arranged into regular systems, there is the

connective tissue frame work of the organ, there are nodules of fat everywhere except under the areola, there are undeveloped sweat glands and sebaceous glands, the glands of Montgomery. In the areola and nipple are some muscular fibres which give the nipple an erectile function.

The histology of the breast varies throughout life according to certain conditions. At the time of birth and continuing for five or six days the breast is capable of lactation, having been activated by the corpus luteum at the same time that the mother's breast was. Immediately thereafter the breast is found to be a rudimentary organ. The parenchyma which consists merely of branching cylindrical tubes embodied in an insignificant amount of fat. There are an undeveloped areola and nipple, the breast scarcely exists.

Throughout the years of childhood but little change takes place. At the time of puberty a decided change takes place in the breasts of both sexes. In the female this change is progressive and lasting. The milk spaces are amplified, distension takes place at the end of some of the ducts with the formation of acini. These are grouped in the formation of a lobule. This group of acini with their ducts are joined in the final milk canal and constitutes a glandular unit. With the occurrence of the first pregnancy evolution takes place, and the gland becomes an active organ. There is a great increase in the parenchyma by the formation of a tremendous number of acini. These are formed by a process of budding and expansion. The lobules of fat which constituted most of the breast are absorbed and disappear, and the breast consists of an activity developed group of glandular units capable of great activity.

After lactation has ceased involution sets in with a diminution of the size and number of acini and with the rehabilitation of fat. With each pregnancy a similar cycle ensues.

With the occurrence of the menopause comes the final involution or atrophy. There is a diminution not only in the size, but in the number of the acini and ducts. In other words, there is a great reduction in the number of gland units. It is very essential that this should be fully understood. Concerning this there has been much misunderstanding and much misstatement.

This final involution of the breast normally consists of an atrophy of all the essential elements of the breast. One element may be more atrophied than another so that there may be a disproportion but there is no productive proliferation of any essential element of the breast. Such proliferation would constitute a pathic process—it would belong to the domain of pathology and not histology.

# BIBLIOGRAPHY

- Bailey and Miller Textbook on Embryology, 1916 p 442  
 Coen E Zeiglers Beitr z Path Anat u z allg Path II 1888 2, p 83  
 Cornil, V Les Tumeurs du Sein Paris, 1908  
 Deaver Surgical Anatomy  
 Gray Anatomy  
 Hindley W Sampson Cancer of the Breast and Its Operative Treatment  
 Krause Kursus der normalen Histologie 1911 plate 98 Figs 207-208 p 4271  
 Kurn H *Deutsch Zeitschr f Chir*, 1909 98 415  
 MacCart William Collected papers of the Mayo Clinic, 1915 903 919  
 Prenant Bonn & Mullard Histologie et Anatomie Microscopique 1904 2 642  
 Quirne Anatomy  
 Rodman W L Diseases of the Breast etc 1908  
 Stiles H J Tr Edinburgh Med Chir Soc 1892  
 Burghard s System of Operative Surgery  
 Vol VIII p 655  
 Stohr P Lehrbuch der Histologie Ed 16 Jena 1915 p 405  
 Talma S *Arch f Microscop Anatomie* 1882 20 135

## THE TREATMENT OF BENIGN TUMORS OF THE BREAST\*

By JOHN B DEEVER, M.D., F.A.C.S.,  
 PHILADELPHIA PA.

THE practice of surgery is standardized with great difficulty. In this ever changing science the adopted procedures of today are found in the therapeutic discards of tomorrow. Yet among the leaders of the profession in each generation certain technical and didactic rules meet with more or less general acceptance. It would, therefore, seem to be incumbent upon the profession at large to base their practices upon such rules. The unfortunate tendency of all succinct and unelaborated scientific rules in surgery is to promote either unwarranted radicalism, or conservatism, as the case may be.

Thus, it is now the fashion, as you are well aware, to look upon tumor disease of whatever character as harboring the potentialities of malignancy. This has certain virtues but is capable, unless modified by careful analysis in the individual case, of leading to grave errors. In the surgery of mammary tumors I am convinced, however that to insure the greatest good to the greatest number would be to advocate the removal of every tumor-bearing breast. This opinion is, of course, based on a consulting experience that has revealed more sins of omission than of commission.

That such radicalism is neither necessary nor justifiable goes without saying. How to

determine when it is right to be conservative, and how to know when radicalism is indicated in the surgery of the breast will be the subject of our remarks.

As an approach to this discussion the treatment of mammary "lumps" which are supposed on clinical grounds to be benign, will serve our purpose better than either the diagnostic or therapeutic consideration of tumors that are suspicious of malignancy.

Tumors of the breast that present the typical clinical manifestations of carcinoma need no discussion. The diagnosis of cancer in the presence of its characteristic physical signs can scarcely be mistaken, and no one will dispute the necessity for radical treatment. Gross carelessness on the part of the physician in making physical examinations continues, however, to spell the doom of many women. The most unfortunate mistakes of the surgeon are made in that large group of cases that presents the typical clinical signs of benignancy, or, to put it otherwise, that lacks the characteristic signs of malignancy. This group includes a number of diseases, either inflammatory or neoplastic in nature, leading to the formation of lumps in the breast. These with few exceptions, have as an important constituent element, epithelium that is abnormally reproductive. Uncontrolled reproductive activity in epithelial tissue leads to carcinoma, the end result of unbridled hyperplasia in connective tissue is sarcoma. This fact should always be kept prominently in view by the surgeon. Academic discussion as to whether benign tumors abnormal involution and other fibro-epithelial disturbances in the breast lead by progressive involution to malignancy is beside the question. The important fact remains that hyperplasia in one area of the breast denotes the latent potentiality of abnormal growth throughout the organ, and that the association of benign and malignant areas occurs with a frequency that justifies the suspicion of malignancy in every instance.

Our own experience in the surgery of the breast is reviewed in considerable detail in a recent monograph by Drs McFarland, Herman and myself.

**Abnormal Involution**—This is the disease of the breast whose principal macroscopical feature is the presence of cysts. These in association with localized thickenings of the matrix, give rise to the appearance of one or more lumps in the breast. Thus a single area of the breast may be diseased, the affection may involve several areas in one or both breasts simultaneously, or, one or both organs may be literally riddled with various sized cysts so that little or no normal breast tissue is left. The latter type of the disease was well de-

\*Read at the Annual Meeting of the Sixth District Branch of the Medical Society of the State of New York at Watkins Glen October 9 1917

scribed by Schimmelbusch, whose name is generally used in association with it. Its pathology, however, is exactly the same as that of the smaller, more localized areas.

Abnormal involution affects the female breast at all ages but is far commoner in middle-aged or older women than in the young. Pain, localized tenderness, discharge from the nipple and the presence of a lump in the breast are the important symptoms. The discharge from the nipple is sometimes serous, sometimes milky and rarely bloody. It is present in only the minority of cases. Pain is the most constant symptom, and since this is rarely associated with early cancer arising *de novo* in the breast, it has an important diagnostic significance. The breast or breasts may be slightly but uniformly increased in size, or there may be localized swellings in one or both mammae. The tumor may consist merely of a vague tender induration, often there is a superficial, freely-movable elastic lump, characteristically cystic, the latter may, however, feel solid when deeply situated in a large breast. Enlargement of the axillary lymph nodes is frequently found and is dependent upon endothelial hyperplasia.

Both the etiology and the pathological identity of abnormal mammary involution remain the subject of controversy among surgeons and pathologists, the moot question being whether it is an inflammatory disturbance, or a neoplastic process of a perversion of involution. Classification of the condition founded on its microscopic appearances is of great interest to the surgeon.

There are two principal forms of abnormal involution—one, the ectatic or cystic in which epithelial hyperplasia is the minor factor—the other, the proliferative, adenomatous or adeno-cystic variety in which epithelial activities constitute the important feature in the microscopic picture. Cyst formation, however, occurs in both forms. In the proliferative type the increased epithelium behaves in one of several ways, which may be classified, as Warren (a) suggests, in the following manner:

- 1 Proliferation of acini—an apparent increase in the number of acini in each lobule

- 2 Papillary outgrowth of epithelium into cystic spaces, the papillæ lacking a connective tissue pedicle or support

- 3 Papillary outgrowths of epithelium into cystic spaces of such complexity that the cyst cavities are almost or may be completely filled by the hyperplastic epithelium. Microscopic examinations of sections of this variety of abnormal involution resemble glandular tissue, hence the term adenomatous, or adeno-cystic. This change is of vital interest to the surgeon because it is chiefly in its presence that the

combination of abnormal involution and carcinoma is observed.

The cystic and adenomatous varieties of the disease commonly occur in the same breast, in fact, in different portions of one diseased area of the breast. Again, it is impossible to differentiate clinically the relatively innocuous areas from those that may be predestined to malignant transformation. Finally, the pre-operative determination of incipient, or, in some cases, even of relatively far advanced malignancy is impossible. Let us clearly understand that the terms early and late as applied to malignant disease refer solely to the distance to which the malignant cells have wandered from the primary growth. These terms have no practical significance when used in reference to the actual time, which we are erroneously led to believe from the history of the patient or from the results of physical examination, that the disease has existed. From the foregoing remarks it would seem easy to determine the presence of abnormal involution, or at least, of some disease other than cancer, in the breast. Were it not for the fact that cancer is believed to originate from or to coexist with abnormal involution, and that other areas of the breast are known to become involved after removal of abnormally-involved areas in some cases, our dilemma would be less acute.

Localized areas of the disease could then be excised with safety and widespread involvement of the breast would merely demand conservative amputation. Or, in the absence of subjective symptoms, the patient could safely be treated palliatively. The surgery of this disease is founded, therefore, on our knowledge of its malignant tendencies or associations. There are good reasons for this. Among the 335 operative specimens of carcinoma that furnished the material for our pathological studies, McFarland found twenty-three (6.8 per cent) instances of such association. Warren states that fifteen of his 517 cases of cancer of the breast were associated with abnormal involution. It is believed by most authorities that about 10 per cent of the adenomatous variety of abnormal involution will develop cancer, while Bloodgood has found that in about 50 per cent of cases with marked adeno-cystic changes cancer is already present at the time of operation. Many pathological investigations have shown chronic mastitis or abnormal involution to be in almost constant association with carcinoma of the breast. It should not be forgotten, however, that the adenomatous variety of abnormal involution is rare, in comparison with the cystic or 'benign' type.

Another and probably more fruitful source

\* Warren, J. C. *Jour. Amer. Med. Assoc.*, 1905, XLV, 160

of data valuable to the surgeon is the study of end results in the cases of abnormal involution treated conservatively. Our own figures throw little light on this subject, but Bloodgood reports 100 cases in which the breasts were explored and cysts of simple character, and sometimes suspicious character removed. The cysts were reported to contain clear fluid and their walls were free of papillary excrescences. Sometimes the walls were indurated, and upon microscopic examination some of these indurations showed carcinoma-like structures. Nothing was done except to excise the cysts and surrounding tissue yet recovery took place without the subsequent development of cancer.

In a series of eighty-three cases of "Cystic Disease of the Breast," most of which were treated conservatively, Greenough and Simmons\* report that by partial operation 80 per cent were apparently cured, that is, free from recurrence, for a period ranging from one to seventeen years. Thirteen cases (15.6 per cent) showed, sooner or later, a return of the disease. Recurrences of the cystic disease or of carcinoma occurred in twelve of the eighty-three cases while a total of sixteen (19 per cent) failed to get permanent relief from the partial operation. This would seem to justify a more conservative attitude regarding the disease than evidently exists, judging from the experience of McFarland, to whose laboratory forty-five breasts were submitted by surgeons for examination. Of these "only four showed mild adeno-cystic change, and only seven epithelial proliferation into cystic spaces. While thirty-four were entirely benign cases of normal or senile involution." If it be true that the breasts of 25 per cent of all middle-aged or older women that come to the post-mortem or dissecting table, show areas identical in structure with those for which many operators are doing radical amputation, the inevitable conclusion follows that the danger of abnormal involution is over-emphasized, and that there is a fear among surgeons of the future development of malignant disease that lacks the support of surgical knowledge and experience.

There does exist, however, sufficient uncertainty of the ultimate end of the patient with abnormally involuted breast to warrant exploratory operation. To decide what to do on clinical evidence alone is to invite disaster. Breasts that are riddled with cysts and in which the parenchyma is practically destroyed should be removed. If the services of a skillful pathologist are at our command the specimen may be turned over to him for immediate examination. Multiple incisions radiating from the nipple should be made in the parenchymal tissue and each and every segment carefully

searched for evidence of malignancy. Typical cancer can scarcely be mistaken by any one experienced in the examination of pathological specimens. Personally, I prefer to make the gross examination myself, and if malignancy is found, to proceed at once with the radical operation. In all doubtful cases the result of microscopic examination of frozen sections is depended upon for diagnosis and the subsequent operative steps. Here there must be team-work between the surgeon and the pathologist. Indecision must be eliminated as much as possible. If we decide, after a careful examination of the gross specimen, that the diagnosis by these means is impossible, we rely on the opinion of the pathologist whose report is based on microscopic examination. If the pathologist is uncertain as to the nature of a breast tumor our practice is not likely to be conservative. It may be taken as almost axiomatic that the greater the uncertainty in diagnosis by these refined methods the better the chances that the patient will be cured by operation.

In cases where a single or several well isolated areas of disease are present we employ the exploratory incision either through the mammary skin when the tumor occupies the upper inner segment of the breast, or the method of Thomas, when the tumor is otherwise situated. All the diseased areas are incised and segments of tissue removed from each for immediate microscopic study. If the diagnosis of benign disease is made all of the involved areas, together with a segment of adjacent healthy tissue, are removed after the plastic resection method of Warren after which the breast may be replaced, sutured and dressed. The age of the patient must to some extent, be taken into consideration in operating on benign cases. Thus a greater effort should be made to save the outline of the breast in young women even when subcutaneous removal of almost the entire parenchyma is necessary. In older women conservative amputation may be more freely employed.

Several mammary lesions, clinically resembling typical forms of abnormal involution, demand similar treatment to that outlined above. Among these are chronic interstitial mastitis, chronic abscesses, chronic sclerosing tuberculosis, simple cysts the benign fibro epithelial tumors and intracystic papillomata.

Chronic interstitial mastitis is the term applied to two clinical forms of connective tissue replacement of the mammary parenchyma. One of these rare and relatively unimportant is identical with the chronic sclerosing mastitis described by Billroth. We are inclined to believe that the older surgeons mistook the atrophic or sclerosing form of cancer for an inflammatory lesion, and that except for

the organization following panmastitis, this form of chronic mastitis is dependent upon carcinoma or tuberculosis. Isolated masses of scar tissue replace destroyed areas of breast tissue. This is the second form of chronic interstitial mastitis. This is a common disease of the breast, the usual cause being pyogenic mastitis. Less frequently it arises through organization of hematomata, while inflammatory obliteration of simple cysts or galactoceles is sometimes productive of scar tissue. Dense masses indefinitely defined from the healthy breast tissue are sometimes found at operation to be either residual abscesses or discrete nodules of tuberculosis.

The majority of the countless number of women who suffer with lactation mastitis recover, and experience no further trouble on account of the disease. A few of them, however, remain well until at or about the time of the menopause when the breast becomes painful and tender, often in the region of the old operative scar. Examination usually shows some tenderness and an indefinite induration of the tissues underlying the incisional scar. Distinct nodules are absent and the examiner will most likely regard the case as one of abnormal involution.

Attention must be paid to the nervous factor in these cases. If the patient is not suffering acutely and there is reasonable assurance that the slight induration is due to an antecedent mastitis, it is justifiable to advise counter irritation and supporting bandages. If, on the other hand, a nodule is palpable to the hand placed flat on the breast, or, if the patient is very obese, or, finally, if for any reason doubt is cast on the diagnosis, it is wiser to explore the breast after the methods already suggested.

We are sometimes chagrined to find that a breast radically removed for what clinically seemed to be typical cancer contains nothing but a chronic abscess with extremely thickened walls, the majority of these are tuberculous. In our review of this subject we found that in every reported case of sclerosing mastitis caused by the tubercle bacillus, the preoperative diagnosis was carcinoma. The remaining cases of chronic mammary abscesses are simply pyogenic in nature. Women who have suffered with breast abscesses years before are prone to develop these residual abscesses which result from a rekindling of the infection through trauma. In the absence of a central point of softening the diagnosis is rarely made.

Mistakes in the diagnosis of tuberculosis of the breast in young women are doubly unfortunate, since the condition is curable by conservative excision of the diseased segment of the breast. The disease is easily diagnosed in the presence of fistulae, which appear early

in the majority of cases. Difficulties arise in the recognition of the discrete sclerotic nodules associated with retraction of the nipple and, possibly, enlarged axillary lymph nodes. "When in doubt explore, is a working rule that will serve to avoid many embarrassments".

Cysts of the breast are commonly a part of the disease which we prefer to call abnormal involution, or they may arise in either benign or malignant tumors. There is, however, a small group of cases in which cysts develop independently of any demonstrable cause or lesions. These are called simple or serous cysts, but it is our belief that the majority of them represent a type of abnormal involution in which the development of one large cyst overshadows the true nature of the underlying disease.

They appear as lumps of varying size, rounded in outline, sometimes nodular, but more often smooth, soft and fluctuating. Pain is a frequent symptom. Malignant attributes are wanting, and when the cysts are large and superficial the diagnosis is made with ease. Aspiration for diagnostic purpose is of little or no value. The differentiation between benignancy and malignancy cannot be made from the nature of the contents of the cysts, and since treatment is founded on their differentiation the decision as to the best procedure must be made when the cyst is exposed.

This also applies to the mammary duct papillomata, the tumor disease known as intra-cystic papilloma, in which papillomata spring from the lining membrane of the milk ducts and later cause cystic distention of the ducts themselves.

In some instances the papilloma is small and the cyst large, in other instances the papilloma entirely fills the cyst, which then gives the impression of being a solid tumor. These tumors are usually situated beneath or in the region of the areola with their long axis in the line of the milk ducts. Bleeding from the nipple is a prominent symptom in 50 per cent of cases. The malignant potentialities of these tumors are marked and should be borne in mind when operation is undertaken.

Practically all indigenous tumors of the breast are composed of both connective and epithelial tissues, but the term fibro-epithelial, as used in current nomenclature, denotes a group of benign growths, the individual members of which have heretofore been named after the proportionate amount of their constituent cells. Some terms previously used were descriptive of their gross structure, such as fibro-cystic adenoma, etc. These tumors are capable of growing to enormous proportions and are subject to various pathological metamorphoses. The surgeon, however, meets with them as single or multiple,

without to egg sized, rounded, discrete, freely movable, only moderately dense nodules. Their percentage incidence is greatest in young women. Fibro epithelial tumors of the breast, as a class, rarely undergo malignant transformation. There is, however, no question but that sarcomata of the peri-ductal variety originate from their stroma, usually as the result of trauma. For this reason the term complicating sarcoma is particularly appropriate. This danger in itself would scarcely warrant operation, however, since it is a rare complication, but the diagnostic uncertainty that attaches to every tumor of the breast, the consciousness of its presence and the apprehension thereby created, justify the removal of the neoplasm. This is carried out on conservative lines until examination of the exposed tumor determines the further course of procedure.

What are the chances of permanent operative cure? That is will the tumor recur after operation? Is the operation safe and not disfiguring? Will the other breast subsequently become diseased?

In answering these questions we present our operative experience in three hundred or more cases of benign diseases of the breast. The post-operative histories of 130 of this series is known to us. One of these died of pneumonia after leaving the hospital, the remaining 129 are living but not all of them are well. Of the seventy patients with fibro epithelial tumors seventeen (24.3 per cent) have returned for a second operation, or have written us that they have had further trouble with their breasts. Six have recurrences in the same breast, seven have had tumors develop in the opposite breast, one has had a recurrence, no doubt malignant in the glands of the neck, one developed a tumor in the opposite axilla, one had the breast amputated subsequently for abnormal involution, and another was operated upon for painful scar.

A summary of our experience in the surgery of benign mammary disease warrants conclusions on the side of conservative methods of treatment, but in doubtful cases no treatment should be considered complete in the absence of a microscopic diagnosis.

All doubts should be eliminated at the time of operation.

In the absence of laboratory diagnostic measures it is better to invite errors on the side of radicalism.

The prognosis of carcinoma is best in direct ratio with the difficulties of clinical diagnosis, provided the proper technique be followed at the operating table.

The greater the subjective symptoms in a

neoplasm of the breast the better are the chances of its being benign.

Women who have had benign neoplasms of the breast removed should be examined at regular periods of time for the possible reappearance of the tumor or for beginning malignancy.

Ideal results in borderline cases, by which we mean the performance of radical operations in the presence of beginning carcinoma, and the avoidance of unnecessary mutilation in benign cases demand diagnostic aids other than those of the hand and eye of the operator, the court of last appeal must always be the laboratory.

## THE BABY THAT CANNOT TAKE MILK \*

By T WOOD CLARKE M D

UTICA N Y

**T**HERE are probably few classes of cases which cause the general practitioner more anxiety or are more frequently referred to the consulting pediatrician than that which can be generally grouped under the heading of "The Baby That Cannot Take Milk."

They form a type in themselves. There is generally a history of more or less successful nursing over a period of a few weeks, followed by an attempt at cow's milk feeding with such unsatisfactory results that the milk has been discarded and the grizzly round of malted milk condensed milk and one after another, the numerous proprietary infant foods, composed largely of gruels or of malt sugar, have been tried in turn. Each one has perhaps agreed for a few days and paternal hopes have been raised only to be shattered rudely by the recurrence of vomiting, colic, crying constipation or diarrhoea.

Finally, in desperation, these babies are referred to the pediatrician. Sometimes the picture is that of the fat pasty condensed milk baby, with the signs of rickets. Sometimes it is even worse and there are the subperiosteal hemorrhages and pseudo paralysis of infantile scurvy. Most commonly, however, one sees the poor, wasted baby with pointed features and transparent ears and hands which could well be used by an artist depicting the present-day conditions in Belgium or Poland. These babies usually cry most of the time, vomit several times a day, are constipated or have green, slimy stools, have a stationary or a losing weight, and badly excoriated buttocks due to the acid stools of the carbohydrate diet.

Read at the Annual Meeting of the Fifth District Branch of the Medical Society of the State of New York at Oswego October 3, 1917.

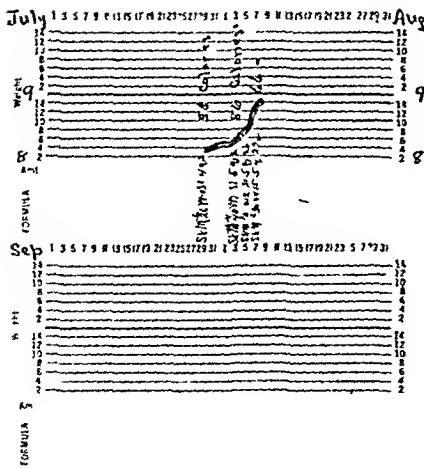


CHART No 4

Case No 2—J F Fat constipation  
Daily weight record

was intensified. The vomiting and constipation disappeared in two days when fed a low fat milk and the baby began to gain in weight rapidly.

CASE No 3—J O, born in Clinton, N Y, January 2, 1916. Birth weight, 7 pounds.

The following history was written by the mother. Nursed baby three months. It gained first two but lost the third, and seemed hungry all the time. Weight at three months old, 9 pounds.

Three Months Old—Formula for five months' old child: upper 8 ounces from each of two quart bottles of milk, milk sugar, 6 level teaspoonsful, cold, unboiled water, 11½ ounces, lime water, 4 ounces. Fed seven bottles of 4½ ounces, every three hours. Results: baby hungry and vomited.

Four Months Old—Same formula, only instead of top milk, thoroughly mixed milk. Baby lost. Weight, 8½ ounces.

Five Months Old—Milk, 8 ounces, water, 16 ounces, cream, 1½ ounces, 1½ measure of peptogenic power. Pasteurized it by bringing it to a temperature of 160 to 165 deg F. This was tried two weeks and the result was the baby vomited it all the time, the bowels were constipated, requiring constant use of suppositories. The baby lost two ounces.

Five and One-half Months Old—Gave stomach a rest by feeding white of egg in a little water twice a day and the rest of the time gave beef juice. Vomited the beef juice, very cross and restless.

Six Months Old—Malted milk, 2 heaping teaspoonsful and four ounces of water. Mixed to a paste and filled up to the required amount of water. Fed every two hours. This was

kept down for one week but at the end of the second week had to change again on account of vomiting.

Six and One-Half Months Old—Condensed milk. Started by giving three level teaspoonsful to three ounces of water and one teaspoonful of lime water. Then gave five ounces at a feeding. Result: hungry and very constipated, gained one-half pound, but at end of second week vomited enough to change again.

Seven Months Old—Nestles' food. Baby neither gained nor lost.

Eight Months Old—Certified milk and water half and half, 1 teaspoonful lime water, 2 teaspoonful cane sugar. Gave seven ounces at a feeding. Result: vomited constantly.

Eight and One-half Months Old—Went back to Nestles' food again and the results were he gained one-quarter pound, but seemed very weak so we took him to the hospital.

When first seen, September 23, 1916, the baby was frightfully emaciated and weak. Weight, 10 pounds and 4 ounces. The baby appeared to be *in extremis*. Hospital care was recommended but refused. A mixture of cow's milk, 3 ounces, water, 3 ounces, milk sugar, 2 drams, was ordered. He did not improve, and three days later was brought to Faxon Hospital.

September 26, 1916—Seen at hospital, weighed 10 pounds and 5 ounces. Feeding same as above.

September 27—Lost one ounce, very constipated, vomiting, appeared hungry. Ordered partly skimmed milk (three ounces of cream removed from the top of a quart), 28 ounces, barley water, 28 ounces, milk sugar, 1½ ounces, 8 ounces every three hours.

September 29—Weight, 10 pounds, 9 ounces, a gain of five ounces. Still hungry. Ordered milk with but one ounce of cream removed, 42 ounces, barley water, 14 ounces, milk sugar, 1 ounce, 8 ounces every three hours.

October 1—Baby stronger, smiling, and happy. Weight, 10 pounds and 14 ounces.

October 2—Weight, 11 pounds, 2 ounces.

October 3—Weight, 11 pounds, 6 ounces.

October 4—Weight, 11 pounds, 10 ounces.

October 5—Weight, 11 pounds, 11 ounces.

October 6—Weight, 12 pounds, a total gain of 1 pound and 13 ounces in ten days.

The baby was then taken home and has not been seen since. The subsequent history is abstracted from letters from the mother. The baby was kept on whole milk and barley water for some weeks, then whole milk with the

gradual addition of other foods suitable to its age Its weights have been as follows

November	1, 1916	—14 pounds
December	1, 1916	—16 pounds
January	1, 1917	—18 pounds
February	1, 1917	—20 pounds
March	1, 1917	—21 pounds
April	1, 1917	—23 pounds
May	1, 1917	—25 pounds
June	1, 1917	—27 pounds
July	1, 1917	—29 pounds
August	1, 1917	—30 pounds
September	1, 1917	—32 pounds
September	21, 1917	—34 pounds

In the second group of cases to be discussed are those in which milk has not agreed because it has been given in an incorrect quantity or improper dilution Occasionally a baby is upset by being overfed This is however, rarely the case for any considerable length of time as the baby that is taking too much into its stomach has its own way of informing the world at large of the fact, and a temporary upset causes a reduction of the diet and consequent improvement

Far more frequently the trouble lies in the fact that the milk has been given in too small a quantity to meet the demands This is

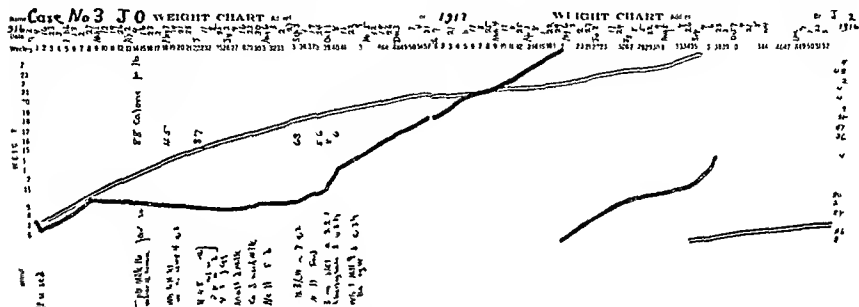


CHART No 5  
Case No 3—J O Fat intolerance Weekly weight record

A glance over the record of this case shows that the baby was given a mixture of milk with too high a cream content at three months of age. It developed such a fat intolerance that when at four months of age it was given a whole milk mixture which should agree with a baby of that age it could not tolerate even that. The top milk was again given at five months with resulting steady loss in weight which convinced the family and the physician that the baby could not take milk. The various patent foods were tried and at eight months of age milk was again used without success. When the baby first came under observation whole milk was again tried but again rejected. When taken to the hospital, however, and put on considerable quantities of low fat milk the gain was immediate and rapid. During the following twelve months the child gained twenty-four pounds or an average of two pounds a month. When put on the low fat milk at eight and a half months of age the baby weighed eight pounds under the normal for its age. Just one year later it was eight pounds above the normal. A baby that was supposed not to be able to take milk, when it was put on it gained twenty-four pounds in one year on this supposed poison

usually done through fear of overfeeding, or from not appreciating that skimmed milk must be fed in stronger mixtures than whole milk and whole milk in stronger than top milk.

Such an error in feeding results in three things. First there is failure to gain in weight,

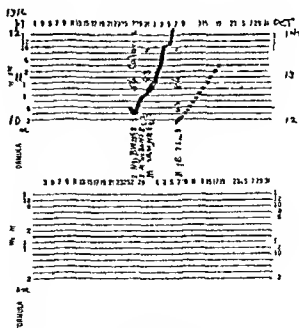


CHART No 6  
Case No 3—J O Fat intolerance  
Daily weight record

or actual loss. Second, there is vomiting. It is not generally recognized by the profession, and not at all by the laity, that hunger may be a cause of vomiting. The baby that gets a bottle not satisfying its desires screams with fury. This tantrum may in itself induce vomiting. As a result the natural tendency is to cut down the food. The anger and the vomiting are increased. If instead of cutting out the milk, the baby's stomach were filled to satiety, the vomiting would cease. Third, the underfeeding upsets the bowels. The underfed baby is usually chronically constipated. If, however, the underfeeding is carried far enough, one may get a starvation diarrhoea. When this appears, it takes courage, in the face of green, slimy stools, to increase the amount of milk, but if one has the courage, one is often rewarded by seeing the stools clear up overnight. The infants of this class, when fed enough milk, provided they are not overfed fat, give gratifying results. I have selected from my files the following as types of this class of case.

**CASE NO 4—E H**, born in Montclair, N J, May 12, 1916, third child, normal labor, birth weight, 7 pounds, 8 ounces. The baby was nursed for three weeks when, owing to a mammary abscess the supply gave out and the baby was weaned. During this time the baby had one slight convulsion.

Three weeks and three days old. Given whole milk, pasteurized, 6 ounces, boiled water, 12 ounces, dextri-maltose,  $\frac{1}{2}$  ounce, 2 ounces every three hours. This was gradually increased until the baby was seven weeks old, when it was taking milk, 9 ounces, water, 15 ounces, dextri-maltose,  $\frac{1}{2}$  ounce, 3 ounces every three hours. The baby did not gain. It had now come to Beansboro, N Y.

**July 3**—The baby had a slight convulsion. At this time the baby was not vomiting and the stools were regular and of good character. Nevertheless, the convulsion was laid to the milk and the baby was put for three days on plain barley water,  $3\frac{1}{2}$  ounces every three hours. It was then given whole milk, 1 ounce, barley water,  $2\frac{1}{2}$  ounces every three hours. Did not gain.

**July 12**—Another slight convulsion, caused the baby again to be put on barley water for three days. This was followed by Nestles' food and barley water,  $3\frac{1}{2}$  ounces every three hours. Four days later this was changed to Nestles' food and Mellins' food, alternating, together with beef juice and orange juice for one week.

**July 26**—A physician from Utica called. He ordered whole milk, 3 ounces, water, 21

ounces, Mellins' food,  $3\frac{1}{2}$  ounces every three hours. This was gradually increased until on August 15th the baby was taking whole milk, 9 ounces, water, 16 ounces, Mellins' food,  $3\frac{1}{2}$  ounces every three hours. The baby now was three months of age.

**August 15**—Acute diarrhoea. Given barley water for three days. This was followed by boiled milk, 4 ounces, water, 20 ounces, Wyeth's food, for one week.

**August 25**—Justs' food. On none of these various feedings did the baby make either an appreciable gain or loss.

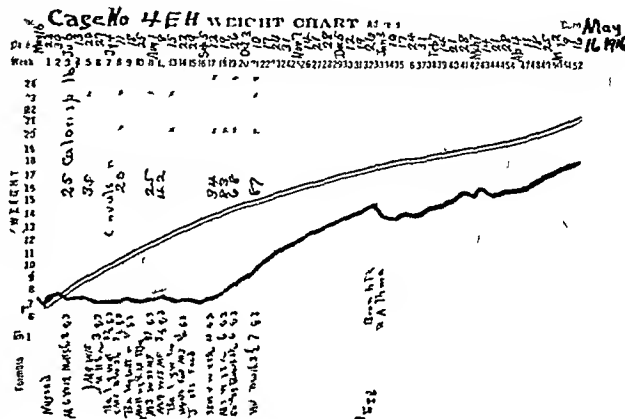


CHART No 7

Case No 4—E H Underfeeding Weekly weight record

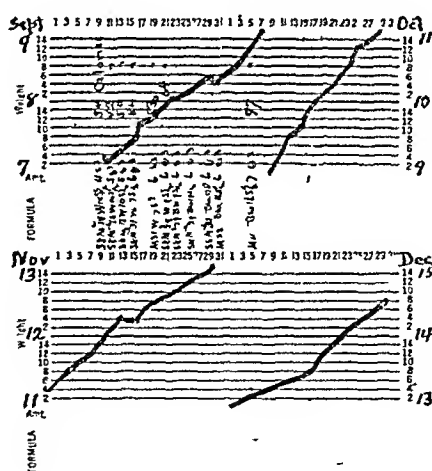


CHART No 8

Case No 4—E H Underfeeding Daily weight record

When first seen, September 9, 1917, at Beansboro, the baby weighed 7 pounds, 4 ounces, four ounces less than when born, four months before. It was a case of advanced emaciation, was very weak and listless. Did not vomit.

Was constipated. On physical examination nothing else abnormal was to be made out. The baby was sent to Fraxton Hospital with a special nurse. It was ordered skimmed milk, 14 ounces, water, 14 ounces, milk sugar,  $\frac{1}{2}$  ounce, 4 ounces every three hours. The parents were convinced that this amount of milk would kill the baby.

September 10—Weight, 7 pounds, 3 ounces, a loss of one ounce. Ordered skimmed milk, 18 ounces, water, 10 ounces, milk sugar,  $\frac{1}{2}$  ounce, 5 ounces every three hours.

September 11—Weight, 7 pounds, 4 ounces.

September 13—Weight, 7 pounds, 5 ounces. Formula same except that only two ounces of cream removed from the quart.

September 15—Weight, 7 pounds, 7 ounces. Still hungry. Ordered milk with but one ounce of cream removed, 31 ounces, water, 17 ounces, milk sugar,  $\frac{1}{2}$  ounce, 6 ounces every three hours. This seemed to satisfy the child. It seemed happy and took an interest in its surroundings.

September 19—Weight, 7 pounds, 13 ounces. Ordered whole milk, 31 ounces, water, 17 ounces, milk sugar,  $\frac{1}{2}$  ounce, 6 ounces every three hours.

September 21—Weight, 8 pounds, 1 ounce, curds in the stools. Amount of cream reduced by removing three ounces from a quart of milk and the following mixture given. Partly skimmed milk, 29 ounces, water, 19 ounces, milk sugar,  $\frac{1}{2}$  ounce, 6 ounces every three hours.

September 23—Weight, 8 pounds, a loss of one ounce. Ordered milk (less three ounces of cream), 29 ounces, barley water, 19 ounces, milk sugar,  $\frac{1}{2}$  ounce, 6 ounces every three hours.

September 31—Weight, 8 pounds, 6 ounces. The addition of the barley water having entirely eliminated the curds from the stools, the cream has been readded gradually. Today ordered whole milk, 32 ounces, barley water, 16 ounces, milk sugar,  $\frac{1}{2}$  ounce, 6 ounces every three hours.

October 3—Weight, 8 pounds, 10 ounces. Patient sent home from hospital.

October 6—Weight 9 pounds. Ordered whole milk, 40 ounces, barley water, 16 ounces, milk sugar,  $\frac{1}{2}$  ounce, 7 ounces every three hours. The infant that for four months had not gained an ounce in weight, and was considered not to be able to take more than nine ounces of milk in the twenty-four hours in four weeks at the hospital gained two pounds and was taking forty ounces of milk each day.

From this time the baby grew rapidly, digested its food and fattened up. In the fall

it returned to the winter home in Montclair. The end of December, when nearly eight months of age, it weighed fourteen and a half pounds. Other foods were added to the diet, including eggs. The baby did not do well during the winter, having recurring attacks of bronchitis and asthma. When next seen

July 17 1917—The weight was eighteen pounds. The child was pale, wheezy and did not look well. A positive skin test with egg albumen was obtained. The mother was instructed to see that the infant received eggs in no form whatever. The asthma at once disappeared, and the baby has gained weight more rapidly and consistently, weighing, October 1, 1917, 21 pounds, at the age of sixteen months.

In this case the difficulty in the feeding lay in the fact that when the baby had a convulsion this was blamed to milk. Why this should have been the conclusion reached, it is hard to understand, as the baby's gastric and intestinal functions were normal and the baby had previously had a convulsion on the breast feeding. However, the convulsions developed a milk phobia to such an extent that the baby was never given milk in sufficient quantity to meet its requirements. Milk was given up and the patent foods resorted to. When the baby was given milk in sufficient quantity it made an uninterrupted recovery. It could have taken milk if enough had been given to it. It was a case of chronic starvation.

CASES No 5 AND 6—R and F McG, twins, Born January 26, 1917. Twins born at normal labor. The mother was albuminuric, and the babies were weaned after a few days. They were then given a mixture consisting of cow's milk, 1 part, water 2 parts, with lime water and milk sugar,  $\frac{1}{2}$  to one ounce every two hours.

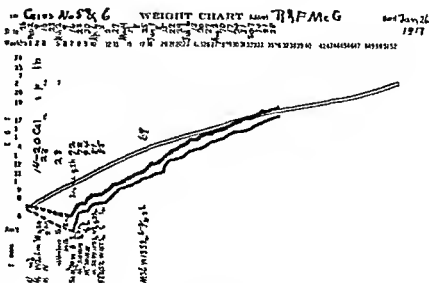


CHART No 9

Cases Nos 5 & 6—R & F McG Underfeeding  
Weekly weight record

When three weeks of age this was increased to milk, 1 part, water, 2 parts, 1 ounce every two hours. The babies cried most of the time and chewed their fists. They were very constipated.

At five weeks of age they were given a mixture of four ounces of cream, obtained by removing one-half ounce from each of eight quarts of certified milk and adding this to sixteen ounces of water. Milk sugar and lime water were also added. They were fed one-half ounce every two hours. They continued to lose weight, to cry, to be constipated and to vomit.

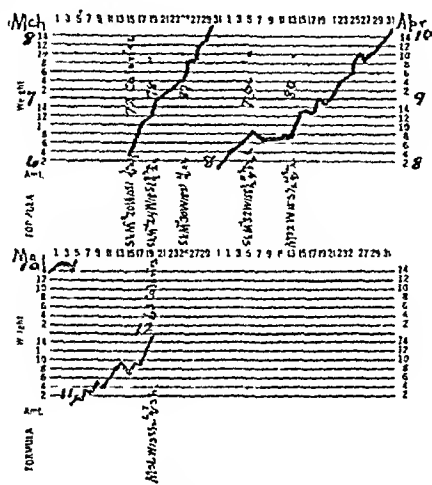


CHART No 10

Case No 5—R McG Underfeeding  
Daily weight record

When first seen at the age of seven weeks, they were in a pitiable state of emaciation. Baby R, whose birth weight was 7 pounds, then weighed 6 pounds and 3 ounces. He was hungry, peaked, pale and weak. Baby F had lost from  $6\frac{3}{4}$  pounds at birth to 4 pounds and 13 ounces. His condition appeared desperate. He was in collapse, had not moved a muscle for forty-eight hours, except to vomit, had refused all food, had a weak, thready pulse, and looked as though the end might be expected at any moment. Baby F was ordered  $\frac{1}{600}$  grain of strychnine, hypodermically, and both infants were given a mixture consisting of cow's milk after two ounces of cream had been removed from a quart bottle of certified milk, two parts, to one of water, three ounces and a half to Baby R, three ounces to Baby F. A fair prognosis was given for Baby R a very bad one for Baby F.

The next day, Baby R had gained seven ounces and Baby F six ounces. Their general condition was greatly improved. In one week, Baby R had gained 15 ounces, and Baby F 1 pound and 7 ounces. The percentage of cream was gradually increased as was the

quantity of milk, until at the end of four weeks they were both on whole milk, 2 parts, water, 1 part,  $4\frac{1}{2}$  ounces every two hours.

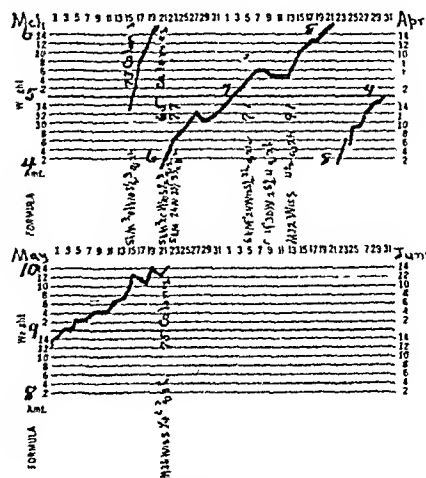


CHART No 11

Case No 6—F McG Underfeeding  
Daily weight record

At present, when eight months of age, Baby R weighs  $18\frac{1}{4}$  pounds, and Baby F  $17\frac{1}{2}$  pounds. They are the picture of robust infancy.

These were cases in which the apparent indigestion was due to the fact that the babies were constantly hungry. The fear of overfeeding nearly caused the babies to be starved to death.

CASE No 7—G S, born in Indianapolis, December 23, 1916. Birth weight, 9 pounds, nursed 5 weeks. At end of this time she was nursed at night and given malted milk and cream during the day, for two weeks. She could not retain the malted milk and was given condensed milk for one week.

At eight weeks of age a specialist was called who put the baby on a four-hour schedule. Breast ten minutes, to be followed by a Mellins' food formula as follows: Skimmed milk, 3 ounces, water, 4 ounces, 1 tablespoonful of Mellins' food. One ounce at a feeding for seven feedings, following breast. This was kept up two months and the baby lost about a pound.

She was then given skimmed milk and oatmeal water, equal parts, five ounces every four hours. This was followed by one week of plain oatmeal water, and one week of barley water, the physician saying she could not retain milk at all.

At four months of age another physician was called who gave milk and Denno's food, equal parts, five ounces every three hours. On this she gained two pounds in two months.



ble, shrieking torment to a happy, contented, playing infant

The third class of cases to be discussed today comprises the babies who have not been able to take milk because the milk given was not fit for a baby to drink. If an infant is to be fed cow's milk, it is essential that it be as clean as it is possible to obtain it by modern dairying methods. A baby fed dirty milk will be made sick, especially if it has been used to clean milk only. An infant that has been fed a milk of doubtful purity, will in time develop a certain amount of immunity to dirt, and may thrive on it. On the other hand a baby, that has been protected from dirty milk all its life, may be acutely poisoned by one bottle of a milk on which the other baby has done well. I believe that most of the physicians who resort to the proprietary infant foods, have been driven to it by the fact that they did not have a decently clean cow's milk available. The milk not being fit to give to the baby, they have listened to the siren song of the proprietary food agents. A large proportion of the physicians of the present day, in their baby feeding are following the advice, not of their school teachers, not of their text books, not of the consulting pediatricists, but of the paid advertising agents of the proprietary infant food manufacturers. When clean milk could not be obtained, this may have been justifiable, but with the rapid advance in the dairying and sanitary laws, there are few towns in which a milk suitable for infant use cannot be obtained, either certified or pasteurized. It is a national disgrace that there are any. Where good milk is not available, home pasteurization by the Freeman pasteurizer is easy and effective.

As an example of a baby who was said to be unable to take milk because the milk was dirty, but gained well when a clean milk was given I shall cite one case.

CASE No 8—J L, born, New York City, March 24, 1913

Normal labor, first child. Birth weight, 5 pounds, 10 ounces. The mother was unable to nurse him and he was put on cow's milk procured from the Walker-Gordon laboratories, on which he thrived, and gained week by week.

At the age of seven weeks he was brought from New York to Frankfort, May 10, weight, 8 pounds and 8 ounces. Upon arrival the baby was put on a local milk. There was a decided change in the weather, snowing and the next day rain and sleet. To this latter condition was laid the fact that the baby was taken sick with vomiting and diarrhoea.

A local doctor was called, and ordered the milk discontinued. The baby was put on Nestle's Food. He took the food but did not gain in weight, so other foods were tried. In the words of the father "in fact there were so many foods

that we could not keep track of them." He refused all of these foods and began to go down in weight very fast. Various modifications of cow's milk were tried along with the foods, with such bad results that the family and physician were convinced that the baby could not possibly take milk.

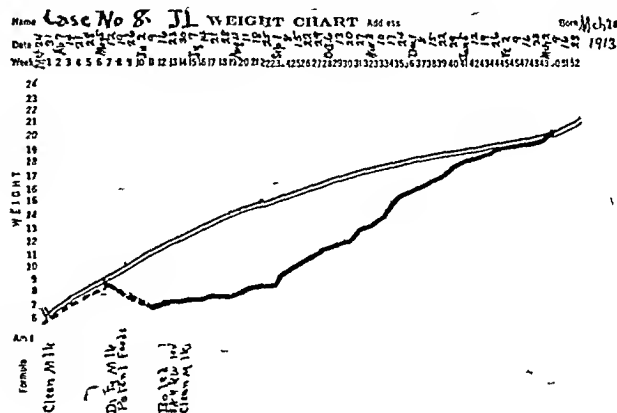


CHART No 14  
Case No 8—J L Dirty milk feeding Weekly weight record

When first seen on June 7th, the baby weighed 7 pounds, was pitifully emaciated, vomiting his feedings and had a diarrhoea. Physical examination was otherwise negative. The baby seemed so depleted, that further starvation was deemed inadvisable, and on the theory that the diarrhoea was due to starvation the baby was started on skimmed, boiled milk, one part to two of water. As soon as arrangements could be made a clean milk was procured from Utica. The bowels cleared up promptly and the baby stopped vomiting. The baby gained weight slowly at first, as the milk mixture was kept rather weak. The strength of the milk was gradually increased until at the end of three months the baby was taking whole milk mixtures and gaining regularly a half-pound a week. At eleven months of age he weighed twenty pounds, certainly enough for an infant weighing five and a half at birth.

In this case the fact that the baby thrived on Walker-Gordon milk, was made ill on the Frankfort milk, and thrived again when pure milk from Utica was administered, proves conclusively that it was not that the baby could not take milk, but it could not take dirty milk.

Very rarely, but still occasionally, one meets a baby with a true milk intolerance. These babies are actually poisoned by cow's milk, will vomit, collapse, may develop very marked urticaria, and sometimes even oedema of the larynx. These babies present a difficult problem, but a problem it is nevertheless possible to solve. The condition is probably one of anaphylaxis and is closely related to the condition produced by feeding egg to children that have the egg hypersensitiveness.

The recent work, however, of Talbot and Schloss, of testing protein hypersensitiveness by rubbing the protein into a small skin scratch and watching for the resulting urticarial wheel, which has aided so much in clearing up the cause of eczema and asthma in children, is applicable to these babies also. If a positive skin test for milk is given, one must proceed with care indeed, for an overdose of the offending protein may kill the baby. These cases may, however, be desensitized by starting with minute doses of the milk and gradually increasing the quantity. While this is being done, some other food must be resorted to, in order to maintain life. Mother's milk is of course the first choice, when it can be obtained. Where this is not possible good results can be had from employing the soy bean gruel, a highly nourishing and easily digested food.

One case of this kind seems worthy of mention.

#### CASE No. 9—Baby, F. H.

Normal baby, nursed nine months, perfectly healthy as long as he was on breast feeding. At nine months of age, as the mother was in need of an operation it was determined to wean the baby. One feeding a day of equal parts of cow's milk and water was ordered. The baby took the bottle nicely, but a few minutes later vomited profusely and collapsed. The pulse became thready and for some hours the child was acutely ill. Two days later he was as well as usual. The weaning was postponed temporarily.

One month later a second attempt was made. One feeding of one part cow's milk to three of water was tried. The former experience was repeated. The mother's breasts were then pumped, and the breast milk fed from a bottle. On the second day five drops of cow's milk were added to the breast milk feedings. This was well taken. The third day this was raised to ten drops with no untoward results. On the fourth day, however, fifteen drops of cow's milk again caused acute poisoning, and the dose had to be again reduced to five drops. The gradual increase was again tried and this time all went well until two drams of cow's milk were added to eight ounces of breast milk. The dose was reduced to thirty drops and the increase again started. Following this there was no further trouble, and after two months of a carefully regulated increase, the baby was taking eight ounces of undiluted cow's milk and thriving on it. He is now four years of age and has never had further trouble from cow's milk.

Though at that time I was unfamiliar with the skin test for protein intolerance, I believe this was such a case. The simplest thing in this case would have been to have given in, said that the baby would not take cow's milk and ordered a proprietary food. Patience and care were,

however, rewarded, the child was desensitized against cow's milk protein, and he was delivered from the danger of a proprietary food life.

Lastly, there is the group of babies with some actual disease or developmental abnormality. The vomiting associated with such diseases as meningitis or tuberculous peritonitis may be passed over with a mere mention. Such babies will retain neither milk nor any other food. They are not digestive problems.

There is, however, one congenital abnormality on which I feel stress should be laid, as I do not believe the profession at large quite appreciates how comparatively common it is, and how brilliant are the therapeutic results, once the diagnosis is made. This is congenital hypertrophic stenosis of the pylorus.

When a baby, either on the breast or on a bottle, after doing well for the first two or four weeks, suddenly begins to vomit, the vomiting becoming progressively more frequent, voluminous and explosive, and this is associated with an obstinate constipation, one should always think of hypertrophic pyloric stenosis. The thinking of the possibility of the condition is nine tenths of the diagnosis. The baby must be undressed, completely, as all ill babies should, given a feeding, placed on its back in a good light, and watched for some minutes, when not trying. If the stenosis exists in the course of a few minutes at most marked peristaltic waves will appear from under the left costal border and pass across the abdomen to the right and slightly downward. At times as many as three waves can be seen at one time. The picture, once seen can never be mistaken. If on careful palpation in the right hypochondrium a small, hard pyloric mass can be felt the diagnosis is definite.

The condition, unrecognized, is probably practically always fatal. Recognized and properly treated, it is easily curable. In the great majority of these cases by the time they come into the hands of the pediatrician, the baby has been weaned on the theory that the mother's milk does not agree, cow's milk has been tried and failed, and one or more of the proprietary foods have been resorted to. In spite of everything the vomiting has increased, the constipation has become more intense, and the baby has emaciated with startling rapidity. Once the condition is recognized, one must remember that procrastination is, in these cases, the thief of life. Knowing that in some of these cases the stenosis is greatly aggravated by a pyloric spasm, probably due to a hyperacidity, one is justified, if the baby is not already too ill, in trying for a few days a diet of ~~sterilized~~ mother's milk or skinned cow's milk.

The citrating serves the double function of reducing the acidity and the resulting spasm and also of preventing the formation of large milk curds, thus increasing the opportunity for the milk to pass through the constricted pylorus. If, however, the baby does not show immediate improvement, and stop the vomiting and the loss of weight, instant operation is indicated. The universally accepted operation today is the Rammstedt operation, of cutting the circular muscle fibres of the pylorus, without going through the submucosa, and leaving the pyloric wound gaping, thus enlarging the pyloric orifice without entering the lumen. These infants stand the operation remarkably well, and show almost immediately startling improvement and uninterrupted recovery. They become fat infants with unimpaired digestion.

I report three cases, one in which the operation has not been necessary and two on which it was performed.

CASE No 10—W N Born Utica, June 9, 1917. First baby, born in hospital, normal labor, birth weight, 7 pounds, 4 ounces. From the beginning the mother had but little breast milk and the baby was constantly hungry. It was nursed for twelve days, and then put on whole milk, 1 part, water 2 parts, milk sugar, and given 2 ounces every 3 hours. At six weeks of age it was given, milk 1 part, water, 1 part, milk sugar, fed 3 ounces every three hours. It did not gain, vomited and was constipated.

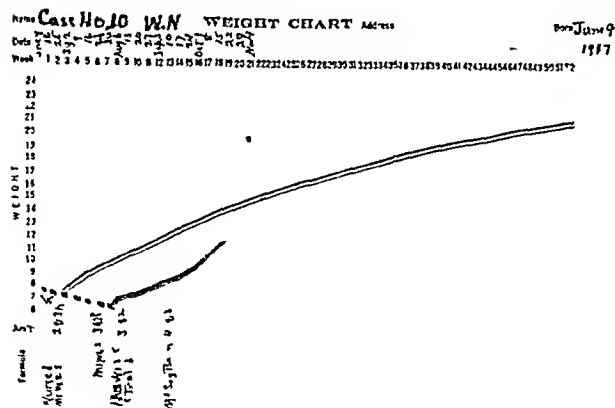


CHART No 15

Case No 10—W N Congenital Hypertrophic Pyloric Stenosis Weekly weight record

When first seen, August 4, 1917, it weighed 6 pounds, 8 ounces. It cried very hard, vomited once or twice a day, stools small in quantity. On physical examination the baby was seen to be very much emaciated, pale, features pointed, abdomen somewhat prominent. There was a right inguinal hernia. There was pronounced visible gastric peristalsis, and at the time of the contraction waves, a hard palpable pyloric tumor

was felt. A diagnosis of congenital hypertrophic pyloric stenosis was made, but as the vomiting was not as pronounced or the constipation as obstinate as in the severe cases of this disease, a guarded prognosis was given. The strength of the milk mixture was increased to whole milk, 2 parts water, water 1 part, with milk sugar, and three ounces given every two hours. Sodium citrate, gr 111, was added to each bottle.

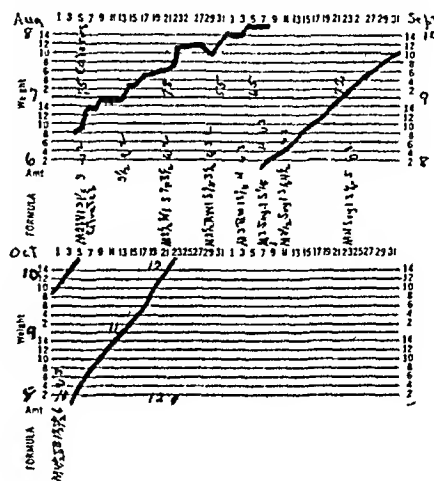


CHART No 16

Case No 10—W N Congenital Hypertrophic Pyloric Stenosis Daily weight record

August 7—Weight, 6 pounds, 14 ounces, a gain of 6 ounces in three days. Baby better satisfied. No increase in vomiting. Stools better.

August 13—But 1 ounce gain in six days. Feeding increased to 3½ ounces every two hours.

August 22—There has been a little gain each day, a total of 10 ounces in nine days, making present weight, 7 pounds, 7 ounces. Feeding changed to milk, 2½ ounces, water 1 ounce, milk sugar, 1 dram, sodium citrate the same. Feeding 3½ ounces every two and one-half hours.

August 29—Baby gained 4 ounces over night after the last increase, then remained stationary for four days, then lost 2 ounces. Weight 7 pounds, 10 ounces. Formula was unchanged but the time was lengthened to three hours.

September 3—Weight, 8 pounds, a gain of 6 ounces in five days. Seems hungry. Feeding increased to whole milk, 3 ounces, barley water, 1 ounce, milk sugar, 1 dram, citrated, 4 ounces every three hours.

September 7—No gain. Feeding ordered. Whole milk, 3 ounces, soy bean gruel, made by boiling four tablespoonsful of soy bean flour and one tablespoonful of barley flour in a quart of water, 1 ounce, milk sugar, 1 dram, citrated, 4 ounces every three hours.

September 11—Weight, 8 pounds, 4 ounces. Ordered milk 3½ ounces, soy bean gruel 1 ounce,

milk sugar 1 dram, citrated,  $4\frac{1}{2}$  ounces every three hours

September 24—Weight, 9 pounds, 3 ounces, a gain of 15 ounces in thirteen days. Baby showing marked general improvement, no vomiting, bowels regular, visible peristalsis still present but less apparent. Baby noticeably growing fatter, laughing and showing an interest in its surroundings. Ordered milk, 4 ounces, soy bean gruel 1 ounce, milk sugar 1 dram, citrated, 5 ounces every three hours.

October 2—Weight, 9 pounds, 12 ounces

October 23—Weight, 12 pounds 2 ounces. A net gain in eleven weeks of five pounds and six ounces.

At six months of age the patient, then a fat baby, had an attack of whooping cough. Vaccines were used. In spite of the former pyloric obstruction the baby did not vomit once.

CASE No 11—L S. Born in Litchfield, N Y, October 21, 1916

Patient is the second child of this mother. The first did well for three weeks, then began to vomit. The vomiting was constant until the baby died at the age of three months. No diagnosis was made.

The present case was born healthy and did well for two and one-half weeks. It then began to vomit. This increased rapidly and became explosive in character. There were small, green, slimy mucous stools. The baby cried all the time and emaciated rapidly.

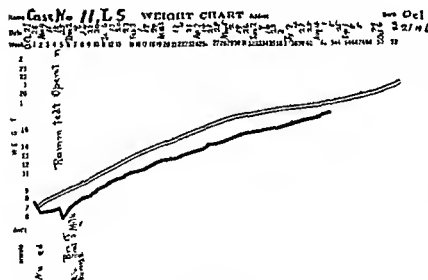


CHART No 17

Case No 11—L S. Congenital Hypertrophic Pyloric Stenosis. Rammstedt operation. Weekly weight record.

When first seen, November 18, 1916, the baby was four weeks old. It was greatly emaciated and weak. Weighed 7 pounds and 8 ounces. It screamed constantly and vomited all food. As it was fifteen miles in the country and there was snow on the ground it was deemed inadvisable to attempt treatment at the farm and the baby was brought to Utica and placed in Faxon Hospital. The following day there was marked

visible peristalsis and a pyloric tumor was palpated. The baby was still nursing, so sodium citrate was given at the time of nursing.

November 20—Weight, 6 pounds, 14 ounces, a loss of 10 ounces over night.

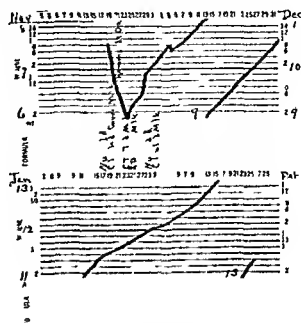


CHART No 18

Case No 11—L S. Congenital Hypertrophic Pyloric Stenosis. Rammstedt operation. Daily weight record.

November 21—Weight, 6 pounds, 8 ounces, a loss of 6 more ounces. On this day the Rammstedt partial pyloroplasty operation was performed by Dr James H Glass of Utica. The patient stood the operation fairly well.

For a week the baby was fed mother's milk by a dropper supplemented by citrated skimmed milk.

November 24—Three days after the operation weight, 5 pounds, 15 ounces, a loss of 9 ounces. Up to this time the baby has been very weak and listless. Today it seems stronger and brighter.

November 25—Weight, 6 pounds, 3 ounces, a gain of 4 ounces over night.

November 28—Weight 6 pounds, 8 ounces. Baby put to breast. Nursed well. This was supplemented by citrated skimmed milk.

November 29—Weight, 6 pounds 14 ounces, a gain of six ounces in one day. The milk is returning to the mother's breast nicely.

December 14—Weight, 8 pounds. The baby has made daily gains, and appears quite well. There is no vomiting, the bowels are regular. The baby sent home.

The subsequent history is uneventful. The milk returned to the mother's breast so that after a few weeks the supplemental feedings were discontinued. The baby continued to spit up a little and was slightly inclined to constipation. It continued to gain from 4 to 8 ounces a week. When next seen.

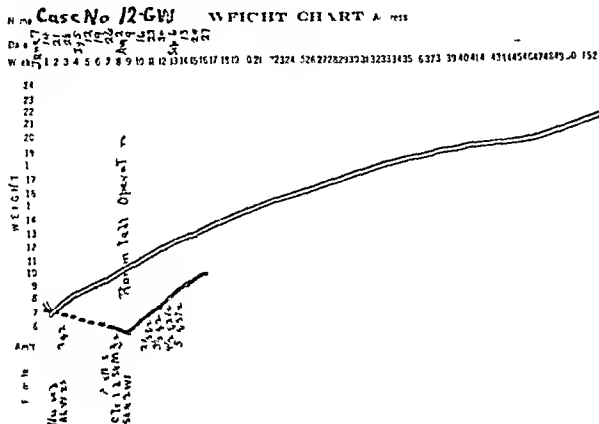
September 25, 1917—Weight, 17 pounds, 8 ounces. A normal baby of ten months of age. No vomiting, bowels regular.

At twelve days old the baby was weaned and put on cow's milk, 6 ounces, water 12 ounces, milk sugar 1 ounce, 2 ounces every two to three hours. It vomited and was constipated. Later it was put on condensed milk and finally on Nestle's food.

August 25.—Weight, 7 pounds. It has been kept on a citrated milk mixture, 1 to 2 ounces of cream removed, 2 parts, water 1 part, taking  $2\frac{1}{2}$  to  $3\frac{1}{2}$  ounces every two to two and one-half hours.

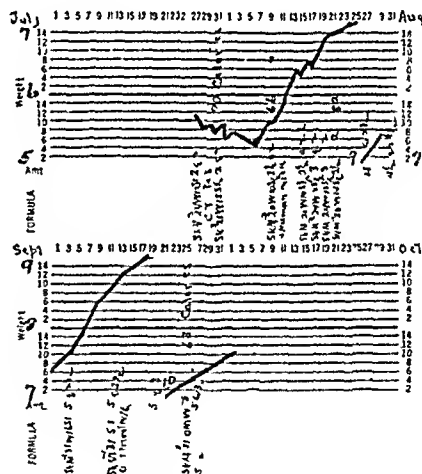
September 24—Weight, 9 pounds, 4 ounces  
Ordered citrated milk, less 1 ounce of cream,  
31 ounces, oatmeal water 8 ounces, milk sugar  
½ ounce, 5 ounces every three hours

October 2—Weight, 9 pounds, 10 ounces. A total gain, just two months after operation of 4 pounds, 6 ounces.



Case No 12—G W Congenital Hypertrophic Pyloric  
Stenosis Rammstedt operation Weekly weight  
record

August 7 — Looks much better Has stopped



Case No 12—G W Congenital Hyper-  
trophic Pyloric Stenosis Rammstedt  
operation Daily weight record

I have dealt with the five types of the infant that are taken off of cow's milk on the ground that they cannot digest it. In each case I believe I have demonstrated that the inability to digest

cow's milk is due to some error in the method of administering it or to some physical obstacle which can be overcome.

In conclusion, therefore, I wish to state that it is my belief that, excluding infants with some constitutional malady as a result of which no food is of value, provided one has a clean pure milk available and one uses patience, intelligence and courage in ordering the modification and administration thereof, practically every baby can be made to take and digest cow's milk. The baby that actually cannot take cow's milk, if it exists at all, is rare enough to be worthy of a place in a medical museum.

### IS IT SYPHILIS OR NOT?\*

By WILLIAM S. GOTTHEIL, M.D.

**B**EARING in mind that I am addressing an audience not of specialists interested in the halting advances of the various departments of medicine, but of practitioners who require broad general principles for their guidance in their daily work, I shall not apologize for the title of this paper, or for the absence in it of anything that is new or startling. For there are few questions in the domain of medical diagnosis that are not, on occasion, more important than this one: Is the dermal affection before us syphilis, to be dealt with by well recognized and readily applied means, is it cancer, requiring prompt recourse to other and possibly more radical methods, or is it an affection of entirely different nature, in which the foregoing therapeutic measures will be not only ineffective, but possibly directly harmful? The decision is sometimes a difficult one, in spite of the additional diagnostic aids that recent years have given us; indeed, strange to say, it is occasionally even rendered more difficult thereby. Spirochaeta findings may help us, the microscope may help us, the blood test may help us, but the limitations of these diagnostic aids, though well understood by those who deal with these problems daily are not, I am afraid properly appreciated by medical men in general. Misleading opinions are apparently very generally prevalent, and it is the purpose of this paper to call attention to the value, on the one hand, and the limitations on the other of the various means by which a decision can be arrived at.

And let me say at the beginning that in my opinion, no test tube and no microscope slide can in most cases take the place of the older and usually more reliable diagnostic methods that are at every one's disposal, and which for generations have been relied upon for the recognition of diseased conditions of

the skin and the visible mucosae. Laboratory findings are of value in some cases, and indispensable in a few instances, but it must never be forgotten that the evidences of sight, and touch, and hearing, the appearance, nature and course of the lesions are, after all, the determining factors in coming to a conclusion. A mucous patch or an initial lesion is syphilis, no matter what the smear may show, and an aenitis is not a pustular syphiloderma, no matter what the blood reaction may show.

Ah, but, it has been said, a clinical diagnosis of the proper kind presupposes an amount of experience and skill that is not at the disposal of every practitioner, a proposition, by the by, which I am not ready to admit, save in exceptional cases. How much easier it is, which has not been said, to send your specimen to a laboratory, and have the diagnosis returned to you by mail. Perfectly true, it is easier, but it is often neither certain nor safe, and it may lead to errors that have lamentable consequences. Instances could be quoted if it were desirable, operations are still occasionally done for syphilitic conditions, and non specific lesions are still occasionally treated for the blood disease. I shall not weary you with a recital of cases in point, some have undoubtedly occurred in the experiences of all of you.

For the pendulum, in its inevitable swing, has gone so far that the overwhelming tendency is now to rely more and more on the laboratory findings, and less and less on direct clinical evidence. The patient has an eruption or a skin lesion, have his blood examined, if it is Wassermann positive the lesion is syphilitic. Or the patient has an affection of the mucosae have a scraping put upon the dark stage, if no spirillae are found the lesion is not syphilitic. So far has this gone that the internes of our hospitals who supposedly represent the latest school teachings on the subject would, if left to themselves hardly attempt to make a diagnosis by ordinary means at all they would subject each case to the laboratory tests, and rely upon them for an opinion. In the opinion of some of us at all events, the pendulum has swung too far already.

And first as to the blood or Wassermann test. As you all know, when the syphilitic virus spreading through the lymphatic channels has overcome the barrier of the chain of lymphatic glands nearest to the site of infection it occasions certain alternations in the blood which may be made manifest in the test-tube. This process, however, takes time some four to six weeks on the average. During this period the patient, already infected shows no blood signs of the disease, which is most unfortunate, since it is in a very real sense the

most critical time of all for the patient, being the period in which the most effectual efforts may be made to cure his disease. Other symptoms and signs must therefore be relied upon for making a diagnosis.

On the other hand, the blood changes that give us the Wassermann reaction, once established, may last indefinitely, in fact, in the great majority of cases do last indefinitely. The patient, once infected, usually has a blood that is Wassermann positive, either at intervals or permanently, for the rest of his life. This is true in most cases, no matter what treatment has been employed, for I believe that, unless treatment in the very early stages of the infection has been successful to the extent of permanently sterilizing his blood, which is only exceptionally the case, the reaction cannot be permanently changed.

What then, in the face of a doubtful condition or lesion does a positive Wassermann mean? Simply that the patient, at some time or other in his life, before or after birth, has had a syphilitic infection. It does not mean that the condition under consideration is syphilitic. It may be an indication of value to us in handling the patient, but it is distinctly subsidiary element in the diagnosis, which must be made on other evidence.

Very much the same considerations hold good for the microscopic examination of smears and sections. Those of us who have had personal experience with these procedures, will, I am sure, be the first to admit that, helpful as they may be in certain cases, the incidents of microscopic technique and the personal equation of the examiner play a role so important that the evidence thus obtained must be regarded as helpful and subsidiary rather than as determinative. This is especially the case with skin sections, for the integument is composed of several tissues of differing densities, contains a number of different tissues, and the picture obtained will differ greatly in accordance with the angle of the section and the influences of staining and manipulation. Dermatopathology has been so elaborated in recent years that the general pathologist, especially in a doubtful or difficult case, has rarely the necessary experience for a decision, the case stands exactly as it does with neuro-pathology. There are exceptions, of course. When the scrapings from a suspicious erosion of the buccal mucosa show abundant and typical treponemas, and the observer is quite sure that they are not some of the spirillae common in the mouth, their finding is of value and may determine the diagnosis. But in such a case the chances are nine out of ten that the lesion and the symptoms are so characteristic that a diagnosis should be made, no matter what the microscopic findings are.

And here I would call attention to a differentiation in the value of evidence which we all well know, but which we often lose sight of. A positive finding, serological or microscopic, at the hands of a competent observer, has a definite value. A negative finding, on the other hand, is much less important, haste, faults of technique, accidental features, and the personal equation of the observer, are all elements that may impair its importance.

Keeping in mind the fact, therefore, that laboratory findings in dermatology and syphilis are to be regarded as aids in diagnosis merely, and not as the main factors on which a decision is to be arrived at, I propose to call attention to a few of the commoner and more important instances in which the question *Is it syphilis or not?* is of great importance. I shall place the symptoms in what I regard as the order of their practical importance.

#### 1. *The Chancie and the lesions that resemble it*

*Chancie*—An insignificant, painless, usually single tumor, with erosion and ulceration, if present, secondary and accidental, characteristic stony hardness, characteristic local adenopathy, rather small, hard, non-tender gland swellings, course of some days or weeks, with gradual subsidence, spirochaete found in scrapings, usually in the young, and appearing weeks after intercourse, other signs of early syphilis in the organism, general glandular system, skin, mucosae, or blood, possibly present, no signs of past syphilis.

*Chancroid*—Very painful and tender, single or multiple, small circular ulceration, no induration save slight inflammatory one, appears a day or two after infection, neighboring lymph glands doughy, swollen, tender, and prone to suppurate, no spirochaete usually present, no signs of early constitutional syphilis, usually in the young, signs of past syphilis may or may not be present.

*Gumma*—Single or multiple doughy painless tumors, usually secondarily infected and exulcerated, no relations to intercourse, painless local adenopathy, no general adenopathy, blood usually Wassermann positive, spirochaete usually not found locally, signs and history of past syphilis present, occurs at any age, lasts indefinitely.

*Herpes*—Small circular superficial itchy vesicles or erosions running their course and disappearing spontaneously in a few days without trace, no induration, ulceration, or characteristic local or general adenopathy, history of repeated past similar attacks, no spirochaete, signs of past or present syphilis may or may not be present, occurs at any age.

*Cancer*—Moderately painful and tender tumor, exulcerated, usually single and in the aged, course of many weeks or months, neighboring lymphatic glands large, moderately hard.

and tender, never suppurating, no spirochaete present, signs of recent or old syphilis may or may not be present, microscopic examination often decisive

*The Secondary Syphiloderm and the Eruptions that resemble it*

**Secondary Syphiloderm**—A general eruption macular, papular, pustular, or tubercular, appearing slowly, persisting for weeks and disappearing spontaneously, individual lesions possibly in various stages of development moderate general symptoms, fever etc., characteristic general adenopathy, all accessible lymph glands being swollen, hard and painless, other signs of syphilis, inguina condylomata mucous patches cephalalgia usually present as also remnants of the initial lesion blood Wassermann positive, usually in young adults

**Psoriasis**—Always a papulo squamous eruption in the beginning, slightly infiltrated red papules with an abundant silvery scaling, and showing bleeding papillae points when these are scraped off extensor surfaces chiefly affected, course very slow lasting for years, generally begins in youth or childhood, no signs of constitutional or local syphilis usually present unaffected by antiluetic treatment

*The Tertiary Syphiloderm or Gumma and the Lesions that resemble it*

**The Gumma**—Always in the beginning a fairly soft tumor or infiltration, may break down into soft gummatous material or become secondarily infected and ulcerate, is often multiple, painless, occurs at any age, neighboring lymph glands enlarged but soft and doughy, runs a course of weeks and months other signs and history of syphilis, present or past are usually found, general health unaffected

**Cancer**—Begins as an insignificant papule or erosion or seab, itchy grows very slowly taking months, usually in the aged neighboring lymph glands enlarged and hard, never softens, secondary infection and ulceration common signs of syphilis past or present may or may not be present, general health finally affected, microscopic evidence usually decisive

**Lupus Vulgaris**—This commonest of the cutaneous tuberculosis begins as one or more deep seated soft, yellowish brown, pinhead sized nodules deep in the skin, which have been classically likened to boiled grains of sago imbedded in the derma begins in early life, and commonest in the young, grows very slowly, taking years to develop, seated oftenest on the face, may become hypertrophic, but never forms gummatous masses, may ulcerate but does not show the gummatous margin and undermined edges shows nodules (tuberculous) in scar tissue of the disease, signs and

symptoms of early syphilis not present, signs of old syphilis may or may not be present

The foregoing sketch presents, to my mind, the elements upon which, in a few typical cases, the differential diagnosis of a syphilitic form a non-syphilitic dermatosis must be made. It is in no way an attempt to cover the field, for that would require a book rather than a paper. It emphasizes the point, however, that decision in almost every case must be based on the objective symptoms mainly that laboratory aids are useful and sometimes necessary, but are not the main elements in the decision, and that the former and not the latter are the determining factors in arriving at a conclusion. And it further emphasizes the point that the syphilographer must be in the first place a dermatologist, since the differential diagnosis "Is it Syphilis or not?" must in nine cases out of ten be made from a non syphilitic lesion of the skin or the visible mucosae

## Military Notes

EDITOR NEW YORK STATE JOURNAL OF MEDICINE  
17 West 43rd Street New York City

DEAR DOCTOR MACLEITH

Recent discussion regarding Army hospitals brings up again the point that the civil hospitals of the country have not been backward in offering their assistance to the Federal Government. The enclosed statistics which have been compiled by the New York State Committee Council of National Defense Medical Section (except that part furnished by Dr Goldwater) will be of interest to all members of the profession as indicating the patriotic response of the hospitals to the Government's needs

Yours very truly  
FREDERICK T VAN BEURDEN JR  
Captain M R C

### THE PATRIOTISM OF THE HOSPITALS

I In December 1917 a questionnaire was sent by the New York State Council of National Defense Medical Section to three hundred seven institutions listed as hospitals of the State of New York in the 1917 Medical Directory of New York New Jersey and Connecticut

II One hundred seventy three replies were received. One hundred sixty seven of these contained sufficient information to compute the commissioned percentage of the total staff

A Taking them as a whole we find

(a) The average percentage of attendings commissioned is 22.5 per cent

(b) The average percentage of Internes commissioned is 53.8 per cent

B Grouping them on a basis of Internes we find

(a) Hospitals with Internes

1 Average percentage of Attending Staff commissioned 23.7 per cent

2 Average percentage of Internes commissioned 53.8 per cent

(b) Hospitals without Internes

1 Average percentage of Attending Staff commissioned 21.4 per cent

C Grouping them on a basis of their commissioned percentage

(a) There are 18 hospitals that have 50 per cent or more commissioned

(b) There are 45 hospitals that have between 25 per cent and 50 per cent commissioned

(c) There are 105 hospitals that have less than 25 per cent commissioned

(d) There are 22 hospitals that have no Staff members commissioned

D Regarding the remaining staff not commissioned

(a) Seventy-one hospitals state that the present staff is more than sufficient for civilian needs and that additional members of attending Staffs can be spared if needed for military service

(b) Sixty-one hospitals state that they have enough but can spare none additional for military service

(c) Thirty-five hospitals state that present staff is insufficient for civilian needs

E Sixty-three hospitals have clearly indicated the insufficient number of their remaining staff by making new appointments to the Attending Staffs

F Three hospitals state that they have been unable to fill vacancies on their Interne Staff

G Forty-six hospitals were caring for officers or enlisted men at the time of replying or had recently been doing so

III The results of a similar investigation by the American Hospital Association, undertaken among 858 hospitals in the United States whose figures were kindly furnished by Dr S S Goldwater, show

A 1 Percentage of Attendings commissioned in U S, 240 per cent

2 Percentage of Attendings commissioned in N Y State, 225 per cent

B 1 Percentage of Internes called to active duty in U S, 280 per cent

2 Percentage of Internes called to active duty in N Y State, 395 per cent

IV Certain points should be noted in considering the above figures and percentages

A The figures for each hospital were supplied to this Committee by the superintendent (or his equivalent) in each case. They were made from the best information obtainable by him and no changes have been made by us except in case of evident misunderstanding of one or two items in our questionnaire. Like all statistics they are subject to correction but efforts have been made to secure accuracy

B A majority, but by no means all of those commissioned are in the Medical Reserve Corps. Membership in the Medical Corps of the Army, Navy, National Army, National Guard, and State Guard, the Naval Reserves and Naval Militia is also represented

C Certain hospitals can, of course, spare a larger percentage than can others, without danger of serious interference with their efficiency

1 Hospitals having a full equipment of Internes can spare a larger percentage of their Attendings than can those with insufficient or no Interne service

2 Special Hospitals, for the Insane, for Tuberculosis, for Epileptics, etc., cannot properly spare so large a percentage of their staff as can General Hospitals

D With this in mind it is fair to say that

A The response of the hospitals to the call of the National Emergency has been for the most part highly patriotic

B In general they have not suffered any real loss of efficiency by so doing, but in certain instances, individual hospitals have lost efficiency by losing too large a percentage of men commissioned

C Certain additional members can be spared from the staffs of selected institutions without injury to them or the public service

D The selection of these additional members should be made with the greatest care

## Legislative Notes

A hearing on the Health Insurance Bill (Senate Bill Int No 496) was held before the Judiciary Committee of the Senate at the Capital in Albany, Tuesday afternoon, March 26th

The opposition to this bill divided for leadership under Dr James Rooney, who assumed charge for the physicians, and Mr Mark A Daily, secretary of the New York State Manufacturers' and Merchants' Association, who directed the other interests

Mr Daily spoke against the bill, giving statistics of costs. A very forceful argument was also presented against health insurance in general and the bill under discussion in particular

Judge A E Ommen followed, speaking for the printing trades, and showed the injustice of adding a further tax upon an already overburdened group of industries. Judge Ommen also stated that he was acquainted with the conditions and aspirations of the working people and that they did not want to be taken care of in this way, but were just as anxious to stand upon their own feet and assert their individuality as any other class of American citizens

Mr Eugene Harding, president of the Tally-Nason Company of Boston, representing the Commercial Travelers' Association, stated that his association, the entire membership of which would be beneficiaries under the proposed act, was absolutely opposed to the bill

Dr Rooney then followed and spoke against the bill, alluding to the unfortunate condition of the medical profession working under similar legislative enactment in other countries

Dr Winter followed, stating that he had corresponded with every county medical society in the state and that the profession was unanimous in its opposition to the bill. He further stated that the inevitable result of the enactment of this Health Insurance Bill would be to reduce the efficiency of the medical profession

Dr George W Kosmak, chairman of the Legislative Committee of the Medical Society of the County of New York, spoke against the bill, urging that if it became a law a form of lodge practice of the worst type would result

Dr Wilham F Gottheil discussed the bill in some detail and strongly urged the Committee not to report it out of committee

The proponents of this bill were led by Mr John Mitchell, who spoke for the bill, stating that he represented 482,000 voters. The impression was that these voters favored this proposed Health Insurance Bill, but it transpired later that the demand was made by only the members present at a conference of the State Federation of Labor, held in Albany in February of the present year

Mr Lynch, Commissioner of Labor, favored the bill and spoke at great length, voicing his opinions on certain medical subjects and apparently settling them to his own entire satisfaction

Mr Miles M Dawson, the well-known actuary, advocated the passage of this bill, but the general impression from his remarks was that he regarded the draft as more or less experimental and would welcome suggestions for its amendment

Dr Andrews, representing the A A L L, touched the subject of health insurance in general

Dr Rooney spoke in rebuttal for the physicians

It is expected that the bill will not be reported out of committee this year

## Medical Society of the State of New York

17 West 43rd Street New York

February 15, 1918

The regular annual meeting of the Medical Society of the State of New York will be held on May 21, 1918 at 11 A. M. in Chancellors Hall, Education Building Albany, N. Y.

ALEXANDER LAMBERT M.D., *President*  
FLOYD M. CRANDALL M.D., *Secretary*

17 West 43rd Street New York

February 15, 1918

The regular annual meeting of the House of Delegates of the Medical Society of the State of New York will be held on May 20, 1918 at 8 P. M. in Chancellors Hall Education Building Albany N. Y.

ALEXANDER LAMBERT M.D., *President*  
FLOYD M. CRANDALL M.D., *Secretary*

### 112TH ANNUAL MEETING

Tuesday, May 21st, 11 A. M.

Chancellors Hall Education Building

Calling the Society to order by the President

Invocation by the Rev. Orleif H. Brooks

Address of Welcome by Arthur J. Bedell M.D.,

Chairman of the Committee on Arrangements

Reading of minutes of 111th Annual Meeting Floyd M. Crandall M.D. Secretary

Address of Welcome on the part of the City Hon. James R. Watt Mayor, City of Albany

Address of Welcome on the part of the State Hon. Charles S. Whitman Governor, State of New York

Oration 'The Psychology of the War,' Hon. James M. Beck LL.D. New York City

### SCIENTIFIC PROGRAM

ARRANGED BY THE COMMITTEE ON SCIENTIFIC WORK

Samuel Lloyd M.D. Chairman, New York

Thomas J. Harris M.D. Acting Chairman, 104 E. 40th Street New York

Arthur Freeborn Chace M.D. New York

Thomas F. Laurie M.D., Syracuse

Thomas Knight Quigley M.D. Rochester

Henry Hall Forbes M.D. New York

T. Wood Clarke M.D. Utica

William G. Bissell M.D. Buffalo

Arthur W. Booth, M.D. Elmira

### SECTION ON MEDICINE

Chairman Arthur Freeborn Chace, M.D. New York

Secretary, Malcolm Sumner Woodbury M.D. Clifton Springs

Place of Meeting County Court House

Tuesday May 21st 2:30 P. M.

'Symposium on Nephritis'

'Etiology Charles Jack Hunt M.D. Clifton Springs

'Diagnosis' Nelson Wilson Janney, M.D., New York

'Pathology' Herbert U. Williams M.D. Buffalo

'Treatment' John Ralston Williams, M.D. Rochester

ter

Wednesday May 22d 9:30 A. M.

Symposium on Military Medicine

Epidemic Meningitis a Review, Simon Flexner M.D. Rockefeller Institute New York

'Classification and Serum Treatment of Pneumonia at Camp Upton Russell L. Cecil M.D. Base Hospital Camp Upton

'Epidemic Cerebrospinal Meningitis at Camp Jackson South Carolina William Worthington Herriek M.D. Base Hospital Columbia S. C.

The Albany Idea Joseph Ambrose Cox M.D. Albany N. Y.

Wednesday May 22d 2:30 P. M.  
Joint Meeting with Section on Surgery  
Symposium on Gout

'The Function of the Thyroid Gland,' Henry S. Plummer, M.D. Rochester Minn. (by invitation)

'Newer Methods in the Diagnosis of Thyroid Disorders Clinical and Pathological,' Emil Goetsch M.D., Baltimore Md. (by invitation)

'Medicinal Treatment,' Hermon C. Gordinier, M.D. Troy

Discussion opened by Myron Botsford Palmer, M.D. Rochester

'Surgical Treatment' Charles Wallace Webb M.D., Clifton Springs

Discussion opened by Granville T. Matlack, M.D., Wilkes Barre Pa. (by invitation)

Thursday, May 23d 9:30 A. M.

'Medicinal Malignant Disease Maurice Packard, M.D. New York

'Salvarsan in Blood Infections of the Streptococcus Viridans Type John Alden Lichty Pittsburgh Pa. (by invitation)

'Treatment of Drug Addiction Charles Francis Stokes M.D. Briar Cliff Manor

'Radium Versus Operative Treatment in Carcinoma of the Bladder' Benjamin S. Barringer, M.D., New York

'The Differential Diagnosis Between Chronic Gastric Ulcer and Carcinoma of the Stomach' Seymour Basch, M.D. New York

### SECTION ON SURGERY

Chairman, Thomas F. Laurie M.D. Syracuse

Secretary Arthur W. Booth M.D. Elmira

Place of meeting County Court House

Tuesday May 21st 2:30 P. M.

A New Method of Treatment for Fracture of the Base of the Skull John Edward Jennings, M.D. Brooklyn

'Congenital Malformations of the Spine with Report of Cases Charles Dwight Reid Jr. M.D. Syracuse

'The Role of the Anesthetist in the Surgical Team' John Joseph Buettner M.D. Syracuse

'Dynamics of Abdominal Hernia Harry R. Trick M.D. Buffalo

'Conservative Surgery of Chronic Intestinal Stasis' Frank Clark Yeomans M.D. New York

Wednesday May 22d 9:30 A. M.

Symposium on Urology

'Surgical Treatment of Renal Tuberculosis Herman Louis Kretschmer M.D., Chicago Ill. (by invitation)

'Prognosis with Surgical Renal Tuberculosis William F. Braunsch M.D. Rochester Minn. (by invitation)

'Clinical Significance of Congenital Anomalies of the Kidney and Ureter with notes on the Embryology and Fetal Development of the Kidney, by Dr. Joseph R. Losce Henry G. Bugbee M.D. New York

'Congenital Hydronephrosis John T. Geraghty M.D. Baltimore Md. (by invitation)

'Perineal Prostatectomy Illustrated with moving pictures Parker Syms M.D. New York

Discussion by Benjamin S. Barringer, M.D. New York

Wednesday May 22d 2:30 P. M.

Joint Meeting with Section on Medicine

Symposium on Gout

'Function of the Thyroid Gland' Henry S. Plummer M.D. Rochester Minn. (by invitation)

'Newer Methods in the Diagnosis of Thyroid Disorders Clinical and Pathological' Emil Goetsch, M.D. Baltimore Md. (by invitation)

"Medical Treatment," Hermon C Gordinier, MD, Troy  
 Discussion opened by Myron Botsford Palmer, MD, Rochester  
 "Surgical Treatment," Charles Wallace Webb, MD, Clifton Springs  
 Discussion Granville T Matlack, MD, Wilkes-Barre, Pa (by invitation)

**Thursday, May 23d, 9 30 A M**  
**Symposium on Military Surgery**

"Control of Infections in Gun Shot Wounds," Walton Martin MD New York  
 "Treatment of Gunshot Wounds of the Humerus," Capt George Ewart Wilson, MD, Toronto, Ont (by invitation)  
 "Treatment of War Wounds," Major Charles Langdon Gibson MD, New York  
 "Some Personal Observations on the Surgery of the Present War," James M Neff, MD, Chicago, Ill (by invitation)

**SECTION ON OBSTETRICS AND GYNECOLOGY**

Chairman, James Knight Quigley, MD, Rochester  
 Secretary, H Dawson Furniss MD, New York  
 Place of Meeting, County Court House

**Tuesday, May 21st, 2 30 P M**

"Sterility," George Merrill Gelser, MD, Rochester  
 Discussion opened by William Hollenback Cary, MD, Brooklyn  
 "Remarks on Fibroid Tumors—a Clinical Experience" Edward Joseph Ill, MD, Newark, N J (by invitation)  
 Discussion opened by George Birney Broad MD, Syracuse

**Symposium on Backache**

"From the Medical Standpoint," Malcolm Sumner Woodbury, MD, Clifton Springs  
 "From the Orthopedic Standpoint," Percy Willard Roberts, MD, New York  
 "From the Gynecologic Standpoint," Guy Leroy Hunner, MD, Baltimore, Md (by invitation)  
 Discussion opened by Loring T Swain, MD, Boston (by invitation), and Albert Vander Veer, MD, Albany

**Wednesday, May 22d, 9 30 A M**

**Joint Meeting with Section on Pediatrics**

"The Value to Both Mother and Child of Prenatal Care" Ralph Waldo Lobenstein, MD, New York  
 "Injuries at Birth, Their Effect Upon the Child and Their Prevention," Barton Cooke Hirst, MD, Philadelphia, Pa (by invitation)  
 "Causes of Still Birth A Study of Five Hundred Cases at the Manhattan Maternity Hospital," J Clifton Edgar MD New York  
 "The Establishment and Maintenance of Breast Feeding" J P Crozer Griffith, MD, Philadelphia, Pa (by invitation)  
 "The Care of the Premature Child in the Home," Herman Schwarz, MD, New York  
 Discussion opened by George W Goler, MD Rochester, George W Kosmak, MD New York, Linnaeus Edford L Fetra, MD, New York, and De Witt Halsey Sherman MD, Buffalo

**Wednesday, May 22d, 2 30 P M**

"Some Observations on the Chemical Examination of the Blood and Urine in Normal Pregnancy and in Toxemia of Pregnancy," Joseph Rankin Losee, MD, New York  
 Discussion opened by William Dixon Fullerton, MD, Cleveland, O (by invitation)

"The Role of the Liver in Eclampsia," William Mortimer Brown, MD, Rochester

"Two and a Half Years' Experience with the Conservative Treatment of Eclampsia," Ross McPherson, MD, New York

Discussion opened by E Gustave Zinke, MD, Cincinnati, O (by invitation)

"Is Cesarean Section Justifiable in Eclampsia and Placenta Prævia," George Livingston Brodhead, MD, New York

Discussion opened by Harold Capron Bailey, MD, New York, and Irving W Potter, MD, Buffalo

**Thursday, May 23d, 9 30 A M**

"Nitrous Oxide Analgesia in Labor," Raymond C Coburn, MD, New York

"The Undeveloped Uterus," Charles Lybrand Bonfield, MD, Cincinnati, O (by invitation)

Discussion opened by James E. King, MD, Buffalo  
 "Labor in Subnormal Pelvis," Frances C Goldsborough, MD, Buffalo

Discussion opened by John Osborn Polak, MD, Brooklyn

"The Management of Breech Presentations," Paul Tompkins Harper, MD, Albany

Discussion opened by Henry William Schoeneck, MD, Syracuse and Ross McPherson, MD, New York

An invitation has been extended to this Section from the President and staff of the new Anthony N Brady Maternity Home, to visit that institution during the meeting Arrangements for this will be made and announced at a later date

**SECTION ON EYE, EAR, NOSE AND THROAT**

Chairman, Henry Hall Forbes, MD, New York  
 Acting Chairman, Wendell C Phillips, MD, New York  
 Secretary, Arthur J Bedell, MD, Albany  
 Place of Meeting, County Court House

**Tuesday, May 21st, 2 30 P M**

**Symposium on New Growths of the Larynx**

"Diagnosis," D Bryson Delavan, MD, New York  
 "Treatment by Internal Surgical Methods," Hubert Arrowsmith, MD, Brooklyn

"Treatment by External Surgical Methods," John McCoy MD, New York

Discussion opened by Thomas Henry Farrell, MD, Utica, and Robert Cunningham Myles, MD, New York

"The Operative Treatment of Ptosis" Walter B Lancaster, MD, Camp Devens, Mass (by invitation)

"Ostoma of Nasal Accessory Sinuses Report of Case in a Syphilitic Patient, Autopsy and Findings," William Ledlie Culbert, MD, New York

**Wednesday, May 22d, 9 30 A M**

"Recurrent Iritis," A Edward Davis, MD, New York

"Intestinal Toxemia in Relation to the Eye, Ear, Nose and Throat," James Garfield Dwyer, MD, New York

Discussion opened by William H Haskin, MD, Thomas J Harris, MD, Arnold Knapp, MD, New York

"Case of Hysterical Amaurosis," George Ray Hare, MD, New York

"Visual Economics Relative to the New York State Compensation Law," Albert C Snell, MD, Rochester

**Wednesday, May 22d, 2 30 P M**

"Notes on the Epidemiology of Contagious Diseases of the Eye," Martin Cohen MD, New York

"Diagnosis of Acoustic Tumors," Isidore Friesner, MD, New York

Certain Types of Meningitis Following Middle Ear

Diseases from a Diagnostic and Therapeutic Standpoint, Truman Laurence Saunders, M.D., New York  
Report of Two Unusual Cases of Nasal Sinus Suppuration in Relation to Mastoidotomy, Hugh B Black well M.D. New York  
Hyperplastic Ethmoiditis: Diagnosis and Treatment," Jacob L Maybaum M.D., New York

Thursday May 23d, 9 30 A M

Symposium Malingering

'Standpoint of the Eye' Ellice Murdoch Alger, M.D. New York  
'Standpoint of the Nose and Throat' Enul Mayer, M.D. New York  
'Standpoint of the Ear' John Alexander Robinson M.D., New York  
Eye Examination in Connection with the Aviation Corps and Demonstrations of Methods David Henry Webster M.D. New York  
Ear Examination in Connection with the Aviation Corps and Demonstration of Labyrinth Tests Capt William Alfred Scruton M.D. New York  
Discussion opened by Philip D Kerrison M.D. and Wendell Christopher Phillips M.D. New York

## SECTION ON PEDIATRICS

Chairman T Wood Clarke M.D. Utica  
Secretary Frank Vander Bogert M.D. Schenectady  
Place of Meeting County Court House

Tuesday May 21st 2 30 P M

The Diarrheal Diseases of Infants Robert Sloan M.D. Utica  
Discussion by Arthur Clesson Hagedorn M.D., Gloversville  
Intestinal Intoxication in Infants, Oscar M Schloss, M.D. New York  
Discussion by J Roberts Johnson M.D. Syracuse  
The Use of Dry Milk in Infant Feeding Roger Herbert Dennett M.D. New York  
Discussion opened by Frank J Williams M.D. Albany

Report of a Case of Pica with Unique Complications Arthur Wight Benson M.D., Troy  
Discussion by George Dow Scott M.D. New York  
Completeness of Fixation with a Specific Antigen in Acute Poliomyelitis Marcus Neustaedter M.D. New York

Discussion by William Hallock Park M.D. and Harry L Abramson M.D. New York, Warren Buxton Stone M.D. Schenectady Wardner D Aver M.D. Syracuse

Wednesday, May 22d 9 30 A M

Joint Meeting with Section on Obstetrics and Gynecology

The Value to Both Mother and Child of Prenatal Care Ralph Waldo Lobenstein M.D., New York  
Injuries at Birth Their Effect Upon the Child and Their Prevention Barton Cooke Hirst M.D. Philadelphia Pa. (by invitation)

Causes of Still Birth A Study of Five Hundred Cases at the Manhattan Maternity Hospital, J Clifton Edgar M.D. New York

The Establishment and Maintenance of Breast Feeding J P Crozer Griffith M.D. Philadelphia Pa. (by invitation)

The Care of the Premature Child in the Home Herman Schwarz M.D. New York  
Discussion by George W Goler M.D. Rochester George W Kosmak M.D. New York Linnaeus Edford La Tetra M.D. New York and DeWitt Halsey Sherman M.D., Buffalo

Wednesday, May 22d, 2 30 P M

The Early History of Infantile Paralysis Louis Curtis Ager, M.D. Brooklyn

Discussion by Henry A. Gibbon, M.D., Poughkeepsie and Charles Gilmore Kerley M.D. New York  
The Longitudinal Sinus—Clinical Notes from the Willard Parker Hospital' Louis Fisher, M.D., New York

Discussion by Abraham L Goodman M.D., New York and Godfrey Roger Pisek M.D. New York

'Blood Therapy in Infectious Diseases' Albert David Kaiser M.D., Rochester

Discussion by Joseph Roby M.D. Rochester

X Ray Plate Demonstration of Types of Vomiting

DeWitt Halsey Sherman M.D. Buffalo

Discussion by Edward J Wynloop M.D., Syracuse

The After Treatment of Cases of Tonsillectomy

Charles Hendee Smith, M.D. New York

Discussion by Thomas H Farrell M.D. Utica

William Shannon M.D. New York Joseph H Abraham M.D. New York and Carl G Leo Wolf, M.D. Buffalo

Thursday, May 23d, 9 30 A M

Meeting at State Training School for Girls, Hudson  
Leave Albany Court House at 9 A M by auto mobiles

11 A M

The New York State Training School for Girls, Hortense V Bruce M.D. Hudson

Address Mrs Joseph Allen President Board of Managers Hudson (by invitation)

Inspection of Institutions

1 P M

Luncheon as guests of the Institution Prepared and served by the pupils

2 P M

Faulty Training in the Nervous Child Lewis Franklin Barker M.D. Professor Clinical Medicine Johns Hopkins University Baltimore Md (by invitation)

The Mentality of Adolescent Delinquents Jessie L Herrick M.D. Resident Physician to School

Important Aspects of the Problems of Delinquency

William Healy M.D. Boston (by invitation)

Discussion opened by E B Hillard Superintendent

Berkshire Industrial Farm Canton (by invitation)

## SECTION ON PUBLIC HEALTH HYGIENE AND SANITATION

Chairman William G Bissell, M.D. Buffalo

Secretary Wilfred J Denno M.D. Albany

Place of Meeting County Court House

Tuesday May 21st 2 30 P M

Symposium on Milk

Organized by Robert S Breed M.D. Bacteriologist Geneva Experiment Station Geneva (by invitation)

'Diseases of Men Transmissible Through Milk to Man' William Hallock Park M.D. New York

Diseases of Cattle Transmissible to Man Through Milk' Vernon A Moore M.D. Ithaca

The Result of an Experiment in Controlling the Milk Supply of a Small City Robert S Breed, Ph.D. Geneva (by invitation)

'Are We Ready for the Compulsory Pasteurization of Milk in the Small Cities and Villages of the State' Prof W A Stocking (by invitation)

Wednesday May 22d 9 30 A M

Public Health Administration' Charles J Hastings M.D. Medical Health Officer Toronto Ontario and President American Public Health Association (by invitation)

Public Health in Russia and the United States'

C E A Winslow, M D, Prof Preventive Medicine, Yale University, New Haven, Conn (by invitation)  
"Industrial Hygiene," Louis I Harris, M D, Director, Bureau Preventable Diseases, Department of Health, New York City

"Standardization of Antipneumococcus and Antimeningococcus Serum," Augustus B Wadsworth, M D, M B Kirkbride and Ruth Gilbert (by invitation), Laboratory, Department of Health, New York State, Albany

"Co-operation Necessary to Achieve Results in Public Health Work," Charles S Prest M D, Sanitary Supervisor, Department of Health, New York State

"Venereal Diseases and Their Relation to Public Health," Francis Eustace Fronczak, M D, Health Commissioner, Buffalo

Wednesday, May 22d, 2 30 P M

Symposium on Military Hygiene

Organized by Major Edwin L Bebee, MCNG, U S A, Retired, formerly Surgeon 74th Infantry

Thursday, May 23d, 9 30 A M

"Food and Its Relation to Health," Edward Clark, M D, Acting Director Bureau of Child Hygiene, Department of Health, State of New York

"The Use of the Colloidal Gold Test in Public Health Work," Walter Zelinski, M D, 5th Laboratory Assistant, Bureau of Laboratories, Department of Health, Buffalo (by invitation)

"Recent Advancements in the Diagnosis of Lobar Pneumonia," Oliver W H Mitchell, M D, Prof Bacteriology and Preventive Medicine, Syracuse School of Medicine, Syracuse

"Recent Factors in the Control of Venereal Disease," Matthias Nicoll, Jr, M D, Deputy Health Commissioner, Department of Health, State of New York

"A Study of 229 Cases of Polomyelitis," Frederick W Sears, M D, Sanitary Supervisor, Department of Health, State of New York

## HOTELS

### Stanwix

150 Rooms  
\$1 00 per person  
\$2 00 per person with bath

### New Kenmore

450 rooms  
Single room, \$1 50 up to \$2 50  
Two persons without bath, \$2 50  
Two persons with bath, \$3 00, \$4 00, \$5 00

### Keelers (Men only)

Single, \$1 00, \$1 50, \$2 00  
Double, \$1 50, \$2 50, \$3 00

### Wellington

200 rooms  
\$1 00 to \$3 00

### Ten Eyck

450 rooms  
\$2 00, \$2 50 without bath  
3 00, \$4 00, \$5 00 with bath  
\$1 00 to \$1 50 per person additional

### The Hampton

200 rooms  
Single, \$2 00, \$2 50, \$3 00, \$3 50, \$4 00  
Double, \$3 50 to \$6 00, all with bath

A list of the boarding houses may be secured by application at the Bureau of Information

## County Societies

### MEDICAL SOCIETY OF THE COUNTY OF MONROE

REGULAR MEETING, ROCHESTER

Tuesday, March 19, 1918

After calling the meeting to order by the President, Dr James P Brady, Mr Tenny spoke to the Society regarding Thrift Stamps and War Saving Certificates

The minutes of the December meeting were read and approved The Secretary read the report for the Comitia Minora

Dr Howard L Prince, Chairman of the Legislative Committee reported on the action taken and to be taken regarding the Health Insurance Bill introduced by Senator Nicoll into the Senate

The tellers, Dr Alexander L Smith and Dr Audley D Stewart, reported the election of seven new members

Dr William B Jones moved that the case of Dr Thomas Ward, an advertising doctor, be referred to the Comitia Minora, with the request that they take action on the matter Seconded by Dr John R Williams, and carried

Captain Edward Ryan, M D, of Toronto, Canada, read the paper of the evening on "Military Hospital Organization and Administration"

Dr Ryan gave a report of his investigation of the military hospitals throughout England and Canada The discussion was opened by Colonel Skinner and Major Hennington of Base Hospital No 19

Dr Owen E Jones moved a vote of thanks to the President and to the Reader Seconded and carried A rising vote of thanks was extended to Dr Ryan

### THE MEDICAL SOCIETY OF THE COUNTY OF SULLIVAN

Special Meeting, Liberty, N Y, March 30, 1918

A special meeting of the Medical Society of the County of Sullivan was held at Liberty on March 30, 1918, and the following *ad interim* officers were elected President, C E Patterson, Liberty, Vice-President, Augustus Mayer, Callicoon, Secretary and Treasurer, Luther C Payne, Liberty

### SCHUYLER COUNTY MEDICAL SOCIETY

Watkins, March 21, 1918

A meeting of the Schuyler County Medical Society was held at Watkins, March, 1918, and the following officers were elected for 1918 President, Nathaniel H Kirby, Burdett, Vice-President, John M Quirk, Watkins, Secretary and Treasurer, Palmer H Lyon, Valois

### MEDICAL SOCIETY OF THE COUNTY OF CATTARAUGUS

Salamanca, April 2, 1918

The second quarterly meeting of the Medical Society of the County of Cattaraugus was held in the Masonic Parlors Salamanca, Tuesday afternoon, April 2d There was a good attendance of members The Scientific Program consisted of a paper on "Pelvic Inflammation," by James E King, M D, of Buffalo, and an address on "Apprehation of Laboratory Methods" by William G Bissell, M D, Buffalo Both were highly interesting and instructive

The Society at its January meeting voted unanimously to remit the dues of all members in the United States service during the continuance of such service.

The Society voted to accept an invitation of the Board of Managers of Rocky Crest Sanitarium to hold the July meeting at that place

## Books Received

## Book Reviews

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review as dictated by their merits or in the interest of our readers.

**THE TREATMENT OF SYPHILIS** A Critical Review by L. W. HARRISON, DSO, MB, ChB, Lt Col, R.A.M.C. Lecturer in Venereal Diseases and Officer in Charge, Military Hospital, Rochester Row, Oxford University Press, 35 W. 32nd St. N. Y. City. Also London. Lng. Price \$1.00.

**POST GRADUATE MEDICINE** Prevention and Treatment of Disease by AUGUSTUS CAILLET, MD, F.A.C.P., Fellow American Medical Association and N. Y. Academy of Medicine, Member and Ex-President American Pediatric Society, Emeritus Professor Medicine and Consulting Pediatrician, N. Y. Post Graduate Medical School and Hospital, Visiting Physician, German Hospital. Profusely illustrated. D. Appleton & Co. New York and London, 1918.

**A TEXT BOOK OF THE PRACTICE OF MEDICINE** by JAMES M. ANDERS, MD, PhD, LL.D., Professor Medicine and Clinical Medicine, Medical-Chirurgical College Graduate School, University Pennsylvania, thirteenth edition, thoroughly revised with the assistance of JOHN H. MUSSER, Jr., MD, Associate in Medicine, University Pennsylvania. Octavo, 1259 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1917. Cloth \$6 net, half morocco \$7.50 net.

**DETAILS OF MILITARY MEDICAL ADMINISTRATION**, by JOSEPH H. FORD, BS, AM, MD, Colonel Medical Corps, U. S. Army. With thirty illustrations. Published with the approval of the Surgeon General, U. S. Army. Philadelphia, P. Blakiston's Son & Co. Price \$3 net.

**A POCKET FORMULARY** by E. QUINN THORNTON, Assistant Professor of Materia Medica in the Jefferson Medical College, Philadelphia. Eleventh edition, revised. Philadelphia & New York: Lea and Febiger, 1918. 292 pp. 16mo. Cloth \$2.00.

**THE PHYSICAL CHEMISTRY OF THE PROTEINS** by T. BRAHNSFORD ROBERTSON, PhD, D. Sc., Prof. Biochemistry and Pharmacology in the Univ. of California. Longmans Green and Co. 4th Avenue and 30th Street, New York. 39 Paternoster Row, London. Bombay, Calcutta and Madras, 1918. Price \$3.00 net.

**THE MEDICAL CLINICS OF NORTH AMERICA** Volume 1 Number 4 (The Boston Number, January, 1918). Octavo of 401 pages, 128 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Published Bi Monthly. Price per year: Paper \$10.00, Cloth \$14.00.

**THE SURGICAL CLINICS OF CHICAGO** Volume II Number 1 (February, 1918). Octavo of 226 pages, 73 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Published Bi Monthly. Price per year: Paper \$10.00, Cloth \$14.00.

**INTERNATIONAL CLINICS** Vol. I 28th series, 1918. J. B. Lippincott Co. Philadelphia and London, 1918.

**PRACTICAL TEXT BOOK OF INFECTION, IMMUNITY AND SPECIFIC THERAPY**, with Special Reference to Immunologic Technique. By JOHN A. KOLMER, MD, Dr. PH. MSc. With an Introduction by ALLEN J. SMITH, MD, ScD, LL.D. Second edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co., 1917. Illustrated. 1259 pp. 8vo. Cloth \$7.00.

The general plan throughout this book seems to have been worked out with very definite thought as to the logical sequences arising in the mind of the average student or practitioner. The earlier chapters deal with general technique, classified clearly under the oft-repeated heading of General Rules. The various steps in each operation being numbered in sequence, placing at the disposal of the laboratory worker incident information easily applied.

In Chapter III, The Technique of Animal Inoculation, a very instructive feature is the separation of the various methods for the production of the specific antibodies. While this in some instances means many repetitions, it seems to be the proper way of definitely bringing the matter of specificity to the mind of the reader.

The general chapters on infection and immunity follow the usual plan, enlarging to a considerable extent the subjects of aggressors and the split products of bacterial proteins, particularly with reference to the method of Vaughan. The general question of immunity with particular reference to antitoxin production is dealt with purely from a practical standpoint, including as it does details with reference to the manufacture of the various sera and also covering very completely the local and general clinical effects following the use of toxins in diagnosis.

Chapter XV, dealing with ferments and anti-ferments, is very complete and in particular covers in detail Abderhalden's reaction. This naturally leads to the more complicated reactions between specific antibodies and the various protein elements of normal and abnormal serum.

The general question of lytic bodies leads immediately to a particularly instructive review of the Wassermann complement fixation test and the phenomena associated with the deviation of complement. Newer problems of complement fixation in other diseases besides lues, tuberculosis and gonorrhea, are covered to date as well as the question of protein differentiations by the same method.

Colloids and lipoids as bearing on immunity bring up the theories of anaphylaxis. This topic is very definitely covered, including concise accounts of the experiments of Richet, Hainburger, Besreba, Gray, Vaughan, and others.

General-therapeutic measures based on immunotherapy theories complete in a general way the latter portion of the book. In addition to the references to serum therapy and the accompanying explanatory cuts, we have added in final the general question of hemotherapy, including the various steps in modified technique for the administration of salvarsan and other specific chemo-therapeutic substances.

This book is of great value to the laboratory man because of the definiteness with which the various steps are stated and also because the reasons are included at the same time. This makes possible reference directly for the purposes of solving laboratory questions without the worker feeling obliged to corroborate details as to the methods from other authorities.

C. H. WATSON.

**MANUAL OF SPLINTS AND APPLIANCES FOR THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY** Report of a Board Convened for the Purpose of Standardizing Certain Medical Department Supplies. Illustrated. Oxford University Press, American Branch, New York, 1917. Price, 75 cents.

This manual is published and distributed to all the United States Army medical officers at home and abroad. It recommends the standardization of splints and appliances and endeavors to teach their proper use and application.

Efforts have been made to produce splints that will fulfill the two mechanical principles of fixation and traction.

Our minds are so befogged by the multiplicity of splints and appliances that have been used during this war, that it is a relief to have simple and uniform splints advocated. If we have advanced to the stage where standard splints can be used successfully for certain types of fractures, great good has been accomplished.

The types of splints described are all comparatively new and it is difficult at this time to prognosticate just how practical they will be in producing results.

HARRY R. TARBOX

**THE SURGICAL CLINICS OF CHICAGO, Vol. I, No. 6** (December, 1917). Index Number, octavo, 245 pages, 89 illustrations. Philadelphia and London: W. B. Saunders Co., published bi-monthly. Price per year: Paper, \$10.00; Cloth, \$14.00.

With the December, 1917, number, the *Surgical Clinics of Chicago* completes its first year. The standard and quality of this journal has been unusually high.

We wonder if it would not be good business policy if the publishers reduced the price. The material for these "Clinics" is carefully selected from a wealth of clinical material. The contributors are all men of national and international repute. Their teachings should be read broadcast. It seems a pity that skill and scientific efforts should be so freely expended, and yet only a few of the profession are able to profit by them.

The "Surgical Clinics of Chicago" ought to be on the desk of every surgeon in America. May the contributors and publishers find some way of putting them there!

HARRY R. TARBOX

**THE SECRETION OF THE URINE**. By ARTHUR R. CUSHNY, M.A., M.D., LL.D., F.R.S., Prof. Pharmacology, University of London, University College. With diagrams. Longmans, Green & Co., London, Fourth Avenue and 30th Street, New York City, Bombay, Calcutta, and Madras, 1917. Price, \$3.00 net.

The first impression one gathers after reading this book is that we know nothing about the physiology of the secretion of urine. This is really an erroneous conclusion. The author seems to draw a similar view, leaving the reader the impression that everything is in conclusion when it comes to our knowledge concerning the method by which urine is secreted. And yet if we analyze carefully the pages we have read we find that there are certain facts which we do know about the physiology of the kidney. These facts are established beyond doubt. True this may not be all that there is to be known concerning renal secretion, but that does not lessen the fact that we know something about the kidney.

The author goes into detail concerning the previous theories explaining the secretion of urine and finds fault with all of them. The book is particularly rich in bibliography. In order to obtain the maximum knowledge upon the subject of renal secretion one cannot simply read this book, but must actually study it.

WM. LINTZ

**AMERICAN ADDRESSES (ON WAR SURGERY)**. By SIR BERKELEY MOYNIHAN, M.S., F.R.S. Philadelphia and London: W. B. Saunders Co., 1917. Price, \$1.75.

"I have gathered a posie of other men's flowers and nothing but the thread that binds them is mine own." So quotes Sir Berkeley Moynihan in his "American Addresses." Sir Berkeley has done much more than this. He has given to us, in the five addresses included in this volume, some of the finest literature yet produced by this war.

In October and November, 1917, Dr. Moynihan read in Chicago and elsewhere five papers on the following subjects: "The Causes of the War," "Gunshot Wounds and Their Treatment," "Wounds of the Knee Joint," "Injuries to the Peripheral Nerves and Their Treatment," and "Gunshot Wounds of the Lungs and Pleura."

"The Causes of the War" was an address to the American College of Surgeons at their fall meeting in Chicago. We believe that this is one of the clearest presentations of the "causes" that has yet been published.

The other subjects relate to surgical experiences and their observations of different surgeons in the war area. There is much that is new. The bacteriology of the soil, clothing and wounds, is instructive. Gunshot wounds are closed at the "earliest possible moment." Early wounds, seen within the contamination period (eight-ten hours), are cleansed with minute thoroughness and are closed without drainage. Eighty per cent of these wounds heal by first intention. Great emphasis is laid on thorough mechanical cleansing of wounds. Various treatments for freely suppurating wounds are analyzed. Carrel-Dakin, Rutherford Morrison's method, Flavine compounds, etc. Complete immobilization of the wounded parts is insisted upon.

"Wounds of the Knee-Joint" are classified as (1) "Cases of Clean Perforating Wound of the Knee-Joint by Rifle Bullet," (2) "Cases of Penetrating or Perforating Wounds of the Joint with a Larger Aperture of Entry or of Exit, or Both, When the Projectile is Retained in the Joint," (3) "Cases of Perforating or Penetrating Wounds of the Joint with Intra-articular Fracture," (4) "Cases of Injury to the Knee-Joint, with Extensive Fracture of the Articular Ends of the Bones." Free incisions and broad exposures are emphasized, and drainage tubes within the joint cavity are forbidden.

In "Injuries to the Peripheral Nerves" we are told that "nerve grafting is of little or no value, nerve anastomosis is to be sharply condemned, the turning down of flaps from the nerve to bridge a wide gap is useless."

"Gunshot Wounds of the Lungs and Pleura" give a mortality of 2 per cent. The causes of death are hemorrhage and sepsis. The essential treatment is rest. Small foreign bodies or bullets in lung tissue often cause no symptoms and may be safely left.

HARRY R. TARBOX

**TUMORS OF THE NERVOUS ACUSTICS AND THE SYNDROME OF THE CEREBELLOPONTILE ANGLE**. By HARVEY CUSHING, M.D., Professor Surgery Harvard University. Octavo of 296 pages, 262 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$5.00 net.

To attempt an explanation of the work of genius is indeed baffling and hopeless, however, one can re-emphasize some of the prominent features of an unusual product from such a mind.

Harvey Cushing, universally acknowledged today as the peer in surgery of the head, not only for his actual accomplishment in variety and volume of brain surgery, but even more important, because of the fundamental principles established by this brilliant investigator and practitioner, has given the profession a new guide in his latest contribution to neurological surgery.

From Alpha to Omega it comprehends a thoroughness and practical brevity which is so characteristic of this author and from its historical introduction to the final page the material exhibits the best extant today on sub-ventorial lesions, their early diagnosis and treatment

It is idle waste of time to review details of this book since any one interested even remotely in neurological surgery, needs no advice as to the merits of a work produced by Harvey Cushing whose name gives it the seal of superior excellence

H G DUNHAM

A LABORATORY GUIDE IN PHARMACOLOGY, by TORALDO SOLLMAN, M.D. Prof of Pharmacology and Materia Medica, Western Reserve University, Cleveland Octavo of 355 pages illustrated Philadelphia and London W B Saunders Co 1917 Cloth, \$2.50 net

The present edition of Professor Sollmann's work has been much improved by placing in a separate volume such of the text as was of interest in the laboratory only But this Laboratory Guide is a book of considerable size in itself, it contains some 400 pages and is more convenient for laboratory use

A MANUEL OF PHARMACOLOGY, and Its Applications to Therapeutics and Toxicology by TORALDO SOLLMAN M.D. Prof Pharmacology and Materia Medica Western Reserve University, Cleveland Ohio Octavo 901 pages illustrated Philadelphia and London W B Saunders Co 1917 Cloth \$4.50 net

This well known work is probably the most complete work on Pharmacology in the English language It includes Pharmacology, Pharmacy, Materia Medica and the Toxicology of practically all drugs This wide scope is valuable as a vademecum, but results in the production of a book embracing so much as to make it verbose from the point of view of the average reader Of course it is intended to supply the needs of student and practitioner and therefore must cover an extensive literature It has become a standard reference work and well merits this distinction As a text book it is a leader With these two recognized accomplishments it would be superfluous to discuss its merits in any but an academic way M F DEL

A CLINICAL MANUAL OF MENTAL DISEASES By FRANCIS X DERCUM M.D. Ph.D. Professor of Nervous and Mental Diseases, Jefferson Medical College, Philadelphia Second Edition Revised Octavo of 497 pages Philadelphia and London W B Saunders Company 1917 Cloth \$3.50 net

Dercum's book is important not only on account of the author's established reputation in his field but it has a double value due to the unusual sources and associations from which the experiences over many years have been drawn

One of his many distinguished associates was Wear Mitchell that pioneer in the recognition and care of so many important phases of pathological neurology and his clinical opportunities have always been exceptional

The book is arranged to facilitate ready reference for the student or practitioner and the various allied mental conditions are systematically and logically grouped

The treatment of the many diseases outlined will be found not only comprehensive and in accord with the latest scientific investigations but what is even more valuable they are measures that the writer himself has applied in his own practice and found of greatest efficacy and that after all is the best advice since it spells—experience—the great test in medicine

H G DUNHAM

MILK AND ITS HYGIENIC RELATIONS, by JANET E LANE CLAYTON, M.D. D.Sc. (Lond), Asst Medical Inspector under the local Government Board published under the direction of the Medical Research Committee (National Health Insurance), 8 plates and diagrams Longmans Green & Co London Eng and 4th Ave and 30th Street N Y Bombay, Calcutta and Madras 1816 All rights reserved Price \$2.50 net

This is an English work which in many ways corresponds to a similar work published in this country in 1908 entitled Milk and Its Relation to the Public Health' by various authors and issued from the Hygienic Laboratory at Washington as Bulletin No 41 It might be mentioned that no reference to this authoritative American work was noticed in the English book

As noted by the author there are summary chapters preceding each subject discussed which as the author says are valuable for those who want a non technical idea on the subject and the main chapters include work which make excellent reference matter for one doing research studies on milk

The older chemistry of milk is of course adhered to The fact that the butter-fat in milk is made up of nine distinct fats is barely mentioned and the fact that the proteins of milk are made up of seventeen or eighteen various amino acids is not mentioned The author speaks of the minimal nutritional improvements of the minor substances in milk and yet later on in the work she points out that the colostrum period is only three or four days but that this is probably a very vital period in that for about this same length of time is there probably direct absorption from the elementary canal of the infant of the greatly increased and highly complex protein content of the colostrum and she concludes her chapter on Immunity in these words Our knowledge upon the transference of immunity by suckling demonstrates the immense value to the young of the colostrum of its mother and emphasizes the need for breast feeding

In this country we are beginning to feel that we know only the A B C of milk chemistry It is hardly fair to call certain undetermined substances found in milk 'traces of waste product', they may be traces of very vital products

The author seems acquainted with the work of Funk upon nutritional subjects and seems not to have mentioned the work of Osborne and Mendel McCollum and Hess No mention is made of Breed's latest work upon leucocytes in milk

The boiling of tubercular cows milk for feeding calves is noted and that there was no ill effects In this country careful observers have found that it was absolutely necessary to start calves for three or four weeks on clean natural milk from healthy tuberculin tested cows and that after this period they might be fed with good results upon any kind of boiled or pasteurized milk We can hardly believe the author when she says that a little table salt added to boiled milk will make it more nutritious for calves than the natural mother's milk Nature's way of feeding calves apparently is a bad number

The author gives rather too much prominence in some places of experiments based upon too few animals For instance, some of the conclusions are based upon experiments with one or two calves The author's own experiments upon feeding rats upon boiled or raw milk at an age when suckling was no longer necessary can hardly be a wise basis upon which to draw conclusions about values of such milks in infant feeding

On page 181 taking two puppies and using I eers 'Quotient of Increase' and finding that the puppy on raw milk showed 118 points and the one on boiled milk 119 points of gain is thin evidence upon which to draw the conclusion The puppies thrive better if the milk is

given boiled. Further experiments show that 'pigs fed upon human milk were in miserable condition, whereas pigs fed upon cows' milk did extremely well.' A couple of pigs fed upon boiled cows' milk did not seem quite so happy" as two other pigs fed upon raw cows' milk. We can only smile that a conclusion is attempted from this experiment.

The author then details her experiments upon four hundred babies: half of them naturally breast fed babies and the other half fed upon boiled milk, and without a single baby fed upon raw milk she concludes that boiled milk is as good as raw. We presume, of course, that she really means raw human milk, although raw cows' milk is specified. The author seems to be unaware of the later reports of the American Pediatric Society (a body composed of seventy of the leading men in the country, including the most important teachers of infant feeding in the United States) that at a recent meeting there was not a single voice in favor of having all milk pasteurized. Neither seems she acquainted with the work of Holt, and Hess and Fish when they concluded that scurvy among infants is on the increase in New York since the general use of pasteurized milk. Of course, this author claims that pasteurization and even double pasteurization of milk are not satisfactory for infant feeding, but that there is only one way to make milk safe and satisfactory for infant feeding and that is by boiling it just before feeding it to an infant. She claims that it is proven that there is no loss of nutritive value by boiling and even gives marked prominence to the idea that perhaps in the end dried milk or milk powder will be the most satisfactory for feeding infants.

In the chapters dealing with various disease producing bacteria which may be found in milk there seems no mention or reference to the great work of Theobald Smith formerly of Harvard and now of the Rockefeller Institute, which author has studied so extensively the question of streptococci in milk. No reference is made to the extensive work of *Bacillus Abortus* by Williams of Cornell University. The author's work seems to show that this organism is easily isolated from milk, whereas at Cornell it was found to be very difficult to isolate in pure culture.

She quotes quite freely and on the whole fairly of the work and methods in use in the United States for securing clean milk. Rosenau is quoted as the author who has determined the thermal death point of many pathogenic bacteria, but no mention is made of his later work in Boston where such pathogenic bacteria passed unharmed through a pasteurizing plant run under most skilled management.

On the whole the work is an argument for boiled milk or milk powder for feeding babies.

Perhaps due to the war times the book is bound poorly and the paper is of poor quality. There seems quite too many topographical errors.

To one keeping in touch with the milk subject it is a good refreshing volume to read even though we in this country cannot as aforementioned accept all conclusions.

HARRIS MOAK

STATE WORK AGAINST INFANTILE PARALYSIS Steps Taken by Forty-three Departments of Health in 1916 Institute for Public Service, New York City, 1917

This compilation of propaganda for prevention of infantile paralysis is exhaustive and national in its scope, therefore grouping in one small book the combined ideas of the best of our health officers throughout the country. It is a reference par excellence for this phase of the work against the most baffling disease of the age in many respects and to read it is to absorb much sound common sense and wisdom.

H G DUNHAM

MEDICAL CLINICS OF NORTH AMERICA New York Number Volume 1, number 3 November, 1917 Published Bi-Monthly by the W B Saunders Co, Philadelphia Price, per year, \$10

This, the third number of the first volume of this publication, contains a wonderful collection of articles by representative New York clinicians, and cannot fail to give pleasant and instructive reading to any practitioner of medicine, in no matter what field he labors. The wide range of the articles is evident from the fact that there are papers on the high caloric diet in typhoid, on the treatment of lobar pneumonia, diet in interstitial nephritis, rheumatic fever, acidosis both in infants and adults, valvular heart disease, diabetes, protein sensitization, and many other important subjects. It would seem that no physician who wishes to keep abreast of the latest views and work in medicine can afford to be without this publication.

W H DONNELLY

INTERNATIONAL CLINICS Volume III Twenty-seventh Series, 1917 J B Lippincott Co, Philadelphia and London, Publisher Price, \$2.00

Volume three of the 1917 series contains a number of timely articles as well as interesting clinical lectures.

Special attention should be called to the articles on "Tetanus in the War of 1914," "Malignant Diphtheria," "Neurasthenia Before and After the War," and "Experience in Reconstructive Surgery of the Extremities."

The portion of the clinic of Dr B A Thomas, of the Philadelphia Polyclinic Hospital, dealing with the treatment of syphilis is worth reading, for it is a clear and concise exposition of the subject.

The International Clinics should be in the libraries of all medical men, for they contain articles upon all of the newest discoveries, etc., written by men who are authorities.

INTERNATIONAL CLINICS Edited by H R M LANDIS, M D Twenty-seventh Series, Volume 4 Philadelphia and London J B Lippincott Co, 1917 - 314 pp., 8vo Cloth, \$2.00

This volume of this well known and increasingly popular and valuable publication is up to the standard of its predecessors. The plan recently adopted to present the clinics of eminent members of the profession in various parts of the country makes available, in a handy form, the individual methods and technique of men who are authorities in their particular fields. Ten Clinics are included in this volume, covering 193 pages. The remaining 121 pages contain seven monographs on "Medicine," "Psychiatry," "Public Health" and "Surgery," concluding with a general index for the four volumes of the twenty-seventh series. The book is well printed and illustrated with many plates and numerous illustrations.

## Deaths

DAVID PENFIELD ALSTIN, M D, New York City, died March 19, 1918

JOSEPH P CREVELING, M D, Auburn, died March 30, 1918

WILLIAM G EYNON, M D, New York City, died March March 24, 1918

HAROLD F MICKLEY, M D, Seneca Falls, died March 16, 1918

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M.D. Editor

Business and Editorial Offices 17 West 43d Street New York U.S.A.  
Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N.Y.U.S.A.

## COMMITTEE ON PUBLICATION

S.W.S. Tom M.D. Chairman N.Y. Edward Livingston Hunt M.D. New York John Cowell Mac Evitt M.D. Brooklyn  
Martin B. Tinker M.D. Ithaca Frank Van Fleet M.D. New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

MAY, 1918

No 5

## ORIGINAL ARTICLES

### VALUE OF ROUTINE EXAMINATION OF THE LABYRINTH\*

By ISAAC H. JONES, A.M., M.D.

PHILADELPHIA, PA.

VERY little need be said of the importance or uses of the study of the cochlear labyrinth to the otologists, but those otologists who have been particularly interested in the study of the vestibular labyrinth feel that the recent advances in Neuro Otology have a practical everyday usefulness to the otologist that is not yet recognized. Neuro Otology signifies the study of the vestibular portion of the internal ear and its intracranial pathways. From our viewpoint it is distinctly unfortunate that at the present time among otologists at large there are two definite misconceptions in regard to this study, unquestionably many otologists are hesitating to undertake this work because of these misconceptions. First, an impression is general that a study of the internal ear and its intracranial pathways is *neurological work*, the other misconception is that such examinations are generally regarded as being extremely difficult.

It is not a neurological study. No one disputes that an examination of the internal ear itself to determine its own integrity is necessarily a task for the otologist. Brannan has made it evident, however, that in testing the internal ear we are at the same time testing its intracranial pathways.

Read at the Annual Meeting of the Medical Society of the State of New York at Utica April 25, 1917.

While it is true that information obtained as to the condition of the intracranial pathways is of neurological value, it is essential to remember that this information is elicited by ear-tests and for that reason is, of course, an otologic study. There is an exact analogy in the well-recognized relation of the ophthalmologist to intracranial cases, the eye examination furnishes valuable data to the neurologist, and yet one considers that such a study is neurological. The otologist in precisely the same way "looks into the brain" by way of the ear.

The other misconception is that the work is enormously difficult. As a matter of fact those who are familiar with this work know that it is not in any sense more difficult than any other form of ear-examination. It is the newness of the work that alone is responsible for this misconception. The entire physiology of these ear-tests, instead of being regarded as bewildering and complex, may be summed up in four sentences, as follows:

1 The eyes are always drawn in the direction of the endolymph movement.

2 The vertigo is always in a direction opposite to the endolymph movement.

(a) Past-pointing is always in a direction opposite to the vertigo.

(b) Falling is always in a direction opposite to the vertigo.

The objective phenomena brought out by the ear tests are the eye-point, the past pointing and the falling. All these phenomena occur in the

*direction of the endolymph movement* Surely, then we do not need to regard such a study as complicated or abstruse, merely by knowing these laws the otologist is master of the physiology of the subject all the hundreds of combinations and permutations of the responses to ear-stimulation follows these simple laws and it is obviously not necessary for the otologist to devote years of study to this particular subject before he feels himself equipped to undertake the tests

The essential point is that just so long as the otologist looks upon this study as neurological and as too highly specialized to be undertaken in his practical every-day work, he will be depriving himself not only of a valuable method of routine examination of ear conditions, but also of large opportunities in extending his field of usefulness

The special purpose of this paper is to bring out the value of this study in routine, every-day examination of ear conditions. An ear examination is certainly incomplete unless we make some tests at least of the condition of the internal ear, further a study of the internal ear is certainly incomplete if only one portion of it has been examined. Surely the vestibular portion of the internal ear should receive equal consideration with the cochlear. The turning and caloric tests enable us to analyze the function of the vestibular labyrinth just as the tuning-fork and other tests enable us to study the auditory. Those otologists devoted to this labyrinth study, feel that we need the *tuning-chair* just as much as, if not more, than the tuning-fork. Even in arriving at a conclusion as to the condition of the *cochlea*, these tests are often invaluable. Every otologist is constantly confronted with cases of deafness in which the significance of the tuning-fork tests is obscure and inconclusive. If in these cases one can demonstrate an involvement of the vestibular labyrinth, which is so readily done by these tests, he has strong presumptive evidence of a similar impairment of the cochlear portion of the internal ear. Stimulation of the internal ear by turning and douching has that advantage over the accepted methods of testing the internal ear in that we have in the resulting nystagmus, past-pointing and falling the clean-cut, quantitative, *objective* evidence of the function of the static portion of the labyrinth and VIII Nerve. The tuning-fork and other tests of the cochlea, on the contrary, are subjective and depend entirely on the intelligence, honesty and co-operation of the patient. The ability of the examiner to see and measure responses from ear-stimulation, such as nystagmus and falling, is a different matter, it enables him to state with so much greater assurance, "Yes" or "No," as to the involvement of the internal ear.

In cases in which the examination of the cochlea shows practically normal hearing, with the single exception that there is a marked diminution

of bone-conduction, the otologist has been accustomed immediately to suspect some systemic affection, such as syphilis. Here the new ear-tests are especially useful, turning or douching shows definitely whether the internal ear is or is not affected.

In routine examination of ear cases it is of course not necessary to conduct all the tests. An examination lasting only two or three minutes is usually sufficient, merely by turning the patient ten times to the right and obtaining 26 seconds of after-turning nystagmus, we can at once conclude that both the static labyrinths are normal. It is best, however, to turn again to the left to make sure that the nystagmus thus obtained is also normal. Very often, however, the nystagmus will prove to be subnormal and immediately we have a hint as to the necessity for further study. We have no hesitancy in suggesting that if the otologist in routine work will make such a simple test, he will be surprised to find that in many instances an entirely new light is thrown upon the condition of his patient. Those of us who have been using the turning-chair as a part of routine examination all agree that we would not want to do without it, for the simple reason that our conception of so many ear conditions is much clearer than it used to be before we employed these tests. The turning tests do not produce any discomfort to the patient, provided that too many tests are not attempted at one sitting. A few words explaining the object of the tests will remove any feeling of apprehension that the patient might have.

When it comes to surgical problems of the internal ear itself, as in inflammatory conditions of the labyrinth resulting from an extension of a suppurative process in the middle ear, it need not be emphasized that the turning, caloric and galvanic tests, and occasionally the fistula test, are indispensable in determining the nature and degree of the involvement. These tests are the only means by which the aural surgeon can determine accurately whether operation on the labyrinth is or is not necessary.

In the larger field of the relation of the ear to the rest of the body through the nervous system, the otologist is coming to realize that a wealth of information may be obtained by this study. The value of the information gathered from a study of the eye and the nerve pathways from the eye is universally conceded, but it is only in the past few years that similar possibilities from an ear examination have come to light. The vestibular tests of therefore not only of use in the analysis of ear conditions, but in the broader field of providing data in general medical and surgical diagnosis. The internal ear as the chief organ of balance at once assumes an importance far greater than the ear as an organ of hearing. This equilibratory organ is intimately connected with numerous

nerve pathways and nerve centers which in their ultimate distribution affect the entire body. It is this larger mechanism that has opened up a new field of usefulness for the otologist. When we consider that a stimulus applied to the ear produces phenomena in parts as remote as the foot, and that there is in fact no portion of the body musculature that is unaffected by stimulation of the vestibular labyrinth, it is evident that all of these parts of the body can be affected only because of nerve pathways connecting them with the ear. When stimulation of the ear produces normal phenomena, it demonstrates that these particular pathways are intact; conversely, the absence of normal responses indicates an impairment by disease of some portion or portions of the pathway. The moving pictures are arranged in two groups. The first group demonstrates all the normal responses in normal individuals. The second group shows the deviations from normal responses in many varied pathological conditions that involve the internal ears, VIII Nerves and the intracranial pathways in the medulla oblongata, pons, cerebello pontile angle, cerebellar peduncles, cerebellum and cerebral crura.

The otologist by means of these tests can be of service to the physician in the analysis of cases of vertigo. All of the pathological cases shown in the moving pictures complained of vertigo. As vertigo is invariably due to an irritation, impairment or destruction of some part or parts of the ear or its associated intracranial pathways and centers, we need no longer regard vertigo and no nystagmus, it is positive evidence because we now have at our command the method of studying all parts of the apparatus that is responsible for the vertigo. We do not hesitate to say that when a "dizzy case" is examined by these tests we are usually able to determine the definite reason for the vertigo. Vertigo may be caused by

- 1 Lesions within the internal ear itself
  - 2 Toxemias affecting the ear or other portions of the vestibular apparatus, such as alcohol, pituitary poisoning, nephritis, gout, rheumatism, syphilis and the infectious fevers
  - 3 Definite lesions along the pathways from the ear within the brain itself, such as tumor, hemorrhage, specific neuritis, multiple sclerosis, brain abscess or meningitis
  - 4 Ocular disturbance, affecting the vestibular mechanism either through the eye muscle nuclei or through association fibres from the cuneus to the cortical terminus of the fibres from the ear in the posterior portion of the first temporal convolution
- In a given case of vertigo, if the ear-tests show entirely normal responses, we know we are dealing with a purely functional neurosis, an ocular disturbance, or with a mild evanescent toxemia which has produced no impairment of

the cellular elements within the internal ear. An eye-examination is then indicated and it becomes necessary for the physician to investigate most carefully any possible source of toxemia in any part of the body. If the ear-tests, on the other hand, show deviations from the normal responses, we immediately have evidence of an actual labyrinth or intracranial lesion, such as those shown in the moving pictures. Vertigo is therefore essentially an ear study, the ear-examination does not determine everything that has to do with the vertigo, but it certainly brings order out of chaos in these cases and makes possible accurate diagnosis and intelligent treatment.

In the differential diagnosis between labyrinth and intracranial lesions the ear-tests are indispensable. In so many instances the symptoms of internal ear disturbances and of cerebellar lesions are identical. If the ear-tests demonstrate a proportionate impairment in both nystagmus and vertigo, we are almost surely dealing with an end organ lesion. If, however, there is produced a normal nystagmus and no vertigo or a normal vertigo and no nystagmus, it is positive evidence of an intracranial lesion. In the locating of intracranial lesions the accuracy of the ear-tests has been surprising, the tests have aided materially in locating lesions in the cerebello-pontile angle, medulla oblongata, pons, cerebellar peduncles, cerebellum and various portions of the cerebrium including the parietal lobes, the temporal lobe and the occipital lobe. Neurologists invariably want an eye examination in intracranial cases. We as otologists are not in a position to state the relative value, but the neurologists and ophthalmologists most acquainted with these ear-tests assert that of the two methods of approach, much more definite information can be had from the ear-tests than from the eye examination. One thing is unquestionably true—no brain should be opened without giving the patient the benefit of the ear-tests.

At the present hour perhaps the most valuable service that the otologist can render to the Government is in the Aviation Corps. Perfect equilibrium is accomplished through an harmonious co operation of three special senses—the eye, the muscle sense, and most particularly this "balance-sense" of the ear. Of these three senses, the ear function is of peculiar importance, in that the vestibular labyrinth has for its sole function the maintenance of balance. After impairment or loss of one of these senses responsible for equilibrium, compensation may take place to a certain extent provided that the individual is on "terra firma." The tibetic may be taught to avail himself of the visual-sense and the balance-sense of the ear, in co-ordinating his movements. Similarly the blind man is able to walk by the aid of a cane, until deprived of the guidance of either the muscle-sense or the balance-sense of the ear. Deaf mutes, in whom the ear-sense is destroyed,

are enabled to maintain their balance by means of sight and muscle-sense, and develop inco-ordination only in the dark or in the water. However, when the human being becomes a bird, as it were, he suddenly finds himself in an entirely new environment. Without functioning internal ears it would probably be impossible for man to invade the realm of the bird. When flying through the air, on what does the aviator rely in order to maintain his equilibrium and that of the aeroplane? Can he rely on his sight? Hardly, for when he is sailing through the clouds, his eyes cannot give him the slightest information about his position in space—not even whether he is right side up or upside down. As regards the muscle-sense, it is undoubtedly true that it plays a certain part, but when the aviator is seated on an unstable and rapidly moving machine, it is hardly conceivable that the weight of his body could determine and maintain his position in space merely by the sense of gravity. In order, therefore, to preserve that wonderful accuracy necessary in controlling such a delicate mechanism as the flying machine, he relies pre-eminently upon his vestibular labyrinth. It is easily conceivable that some of the unexplained accidents in aviating may be due to a concussion of the internal ear, produced either by the rush of the air or by the decrease of the usual air-pressure when at great heights. Since normal internal ears are such an important asset to the aviator, common prudence would suggest a most careful examination of the degree of function of one's internal ears before taking up flying as an occupation. The ear-tests furnish an exact and mathematical analysis not only of the function of the internal ear, but also of the entire vestibular apparatus. When a candidate for Government service presents himself, it is for his own personal interest as well as for the good of the service that every portion of his "balance apparatus" should be declared intact and normally functioning. This can be positively determined by the ear tests, "Yes" or "No." If after the turning and caloric test, the candidate shows normal responses in nystagmus, vertigo, past-pointing and falling, he is fit for this service, if he does *not* he is unfit.

This new field of otological study is large, although the work is only in its infancy, yet we do know at least that it has great possibilities of usefulness. We would suggest that the study of the labyrinth is of value to the otologist in the following ways, stated in the order of their importance:

- 1 In routine study of ear cases,
- 2 In determining the cause of vertigo, no matter what its origin may be, and
- 3 In intracranial localization.

In order to develop this study to the full limit of its usefulness it will require the combined work of many otologists throughout the world.

It is hardly probable that the busy otologist will find time to concern himself so much with matters of intracranial localization, if, however, otologists at large were to use the turning-chair in routine ear examination, it is highly probable that they would soon develop a large interest in the broader aspects of the work.

## DIRECT LARYNGOSCOPY IN THE TREATMENT OF CHRONIC POST-DIPHTHERITIC LARYNGO-TRACHEAL STENOSIS\*

By HENRY LOWNDES LYNNAH, M.D.,

NEW YORK CITY.

THE different types of chronic post-diphtheritic laryngo-tracheal stenosis should be classified as follows:

- 1 Neurotic
- 2 Spasmodic
- 3 Traumatic
- 4 Pathologic

*Neurotic*—There is a marked neurotic element which accompanies all cases of laryngo-tracheal stenosis. The impending fear of having an intubation tube or tracheal canula removed promotes a stage of excitement often bordering on convulsions, especially in children. The passive congestion caused by the crying or struggling child adds to the difficulty, and invariably makes reintubation or recanulation necessary from glottic spasm, subglottic and tracheal edema. At times adults suffer from this "neurotic shock" in equal proportion to that encountered in children.

As it is so much easier for the child to breathe through the lumen of a properly fitting intubation tube or tracheal canula, the fright that naturally follows when the intake of air is to them not as easy as with the tube in situ often makes detubation and decanulation extremely difficult.

The children will often run away from the nurse and hide, for previous experience tells them what is about to happen. Many of them, perhaps, often go to the operating table with the fear that their death warrant is about to be signed. There is apparently a vicious circle which should be considered with this "chronic neurotic fear" of impending accident. Venous passive congestion promotes subglottic edema and gradual asphyxiation, and the fear of asphyxiation keeps up the ever active neurotic element.

All of these conditions taken together makes the final cure of the case at times an extremely discouraging problem.

*Spasmodic*—Spasm of the glottis is usually the result of the wearing of an intubation tube for a long period, especially when the neck of the tube is too thick and holds the vocal cords in a

\* Read at the Annual Meeting of the Medical Society of the State of New York at Utica, April 26, 1917.

state of fixation or functional disuse. The wide neck tube virtually acts as a splint to the intra laryngeal muscles, and as the balance of power between the opposing sets of muscles the adductors and abductors is disturbed, adductor spasm is the natural result. Supraglottic and arytenoid edema may also contribute to the rapid closure of the glottic aperture.

To overcome pure spasm of the adductors (closers of the vocal cords) an extremely narrow neck tube with a long antero-posterior lumen should be used. This type of tube allows for some movement of the vocal cords, as well as re-education of the posticus muscle so that the cords can separate while the tube is in situ. The writer has overcome pure glottic spasm in a number of cases by the use of his cut-out flat head posticus tubes. These tubes are cut out in the posterior portion of the lumen and allow for free play of the posticus muscle and arytenoid cartilages. With the use of these tubes persistent adductor spasm is readily overcome.

On other cases in whom digital intubation has been constantly performed, the writer has been able to deceive the patient by removing the tube by direct inspection and immediately introduce a small tracheoscope or bronchoscope between the cords and gradually remove the tracheoscope to see the result. When subglottic edema is not present the partial separation of the cords with the first inspiration allows for free passage of air and the direct speculum through which the scope was passed is removed and the patient almost invariably remains permanently debilitated. These cases have become accustomed to the digital method of removal of the tube as practiced by Dr. O'Dwyer but as they are not aware of what is being done by direct means, the neurotic spasm element is overcome with gratifying results. The writer has recorded a number of instances in children from whom the tube had been removed for one or more weeks and were breathing quite naturally without the tube who could be easily thrown into a frenzy when they saw the O'Dwyer instruments as they probably thought they were to be used on them. In one instance a little infant of one and one half years became so excited when he recognized the O'Dwyer instruments which were kept on the table next to his crib for emergency purposes that the nurse sent in a "hurry call" as she feared reintubation may be necessary. The fright and crying of the child brought about sufficient passive congestion and glottic spasm to make him dyspneic but reintubation was not necessary and the child made a perfect recovery. The citation of these cases only goes to prove that children at almost any age soon become accustomed to the manner in which a tube is removed and become easily frightened when the original method of tubal removal is attempted from time to time in order to effect a cure.

The cut-out flat head posticus tube should never be used when there is polypoid tissue present. Practising direct means is a cure for adductor spasm after reintroduction of a tracheoscope is of little or no value when supraglottic edema is present, but it is of great value and has been very advantageous in the writer's hands in pure glottic spasm.

#### *Traumatic—*

- a Intubational
- b Tracheotomic
- c Operative

*Intubational*—Faulty intubation is often the primary cause of chronic post-diphtheritic stenosis, especially when the unfortunate false passage is made in the larynx by the hand of the unskilled intubator. It is not infrequent for the writer when examining the larynx by direct inspection to see the whole which has been driven into the laryngeal ventricle or a fracture of the cricoid cartilage, or a dislocation of one arytenoid cartilage, or both. The attempt at digital intubation has at times been made with such force that the end of the tube is driven through the cartilage out into the tissues of the neck. Such false passages are almost invariably fatal from mediastinal infection.

The writer can recall five instances of false passage into the laryngeal ventricle one of whom had marked generalized subcutaneous emphysema following the accident all of whom recovered after the tube was introduced properly into the larynx under direct vision. The writer has also noted intubational ulcers when the retention swell at the cricoid cartilage was too thick for the narrow lumen at that level. Tubal pressure together with the necrotic infiltrative diphtheritic process he feels is responsible for necrosis of the cricoid cartilage and therefore, prefers using a long narrow lumen tube with a bulbous tracheal end to avoid pressure on the cricoid cartilage.

For anyone to make a false passage into the larynx with an intubation tube in these days of direct laryngeal intubation is inexcusable. Far less damage can be caused by tracheotomy even when not performed in the median line than by one attempt at intubation when an effort is made to drive the tube in at all hazards.

*b Tracheotomic*—Chronic laryngeal stenosis has followed primary tracheotomy just as frequent as it has following intubation. While ulcerations occur in the trachea from the constant movement of the end of the intubation tube they are seldom deep enough to cause necrosis of the cartilage though villous fungating granulations are frequently produced in this locality. The unfortunate thing is that tracheotomy is often performed too late and made a still emergency operation. When there is a necessity for reintubation of a case that has been without a tube tracheotomy should be thought of first rather than last.

Reintubation in such cases is frequently impossible by the hand of the most skilled intubator, even though he uses small tubes in attempting to enter the stenosed larynx. One such attempt at intubation may shut off the millimeter of space in the larynx, and the emergency tracheotomy may be of little aid. We have had cases admitted to the Willard Parker and Kingston Hospitals on whom emergency tracheotomy had saved the life of the child, but the subsequent contraction of the many stab wounds made the case one of difficult tracheal stenosis. The so-called high tracheotomy is most frequently performed in the emergency, as well as transverse incisions even into the thyroid cartilage. In one case a transverse thyrotomy in an emergency severed the anterior commissure of the vocal cords. In the rapid stab emergency tracheotomy the knife blade is frequently used with such pressure that the posterior tracheal wall is severed and the incision carried into the esophagus resulting in a very bothersome tracheo-esophageal fistula. Many incisions and cutting off of portions of the cartilaginous rings, as well as fracturing and denuding the tracheal rings by the rapid introduction of the dilating forceps will be followed by subsequent contraction, and render the case difficult to cure. Tracheotomy when performed properly and with plenty of time, is one of the most life-saving operations which we have in surgery. But unfortunately the stab tracheotomy has been responsible for much of the high mortality rate and the demise is attributed to the tracheotomy when in fact in many instances the tissues of the neck are severed only and the trachea never even opened. The writer believes that tracheal canula ulcerations are extremely rare, even with the old style fenestrated canula. Anterior and posterior spur formations are frequent, especially when an oversize canula is used which prevents air from passing to the larynx. The writer has never seen a properly fitting intubation tube or tracheal canula do any harm, and it is doubtful if they ever are a source of trouble when introduced properly, no matter how many times the procedure may be necessary.

*c Operative*—Thyrotomies for the removal of bands of adhesions and laryngeal eviceration. When this operation was performed and the fistula allowed to granulate over an intubational tube a very dense cicatricial scar was the result. These dense masses of cicatricial tissue would continue to contract indefinitely and invariably resulted in further stenosis which necessitated further operative measures such as laryngostomy to effect a cure.

*Pathologic*—The whole of the pathology of post-diphtheritic, laryngo-tracheal stenosis is laid down in the beginning with the acute diphtheritic process. Diphtheria is a dissecting necrotic disease, and upon the duration of the disease and the degree of involvement of the larynx and trachea

depend the subsequent changes which occur in these localities. The writer has collected ten cases of laryngeal diphtheria which responded so readily to antitoxin that intubation was never performed. All of these cases became dyspneic from seven to ten days after the primary diphtheritic process had subsided, and all of them required intubation to relieve the stenosis. Some of them were thought to be reinfecting by diphtheria, but direct laryngeal views revealed the ever present subglottic edema. This only goes to prove that upon the degree and duration of the diphtheritic process depends the amount of infiltrative involvement of the laryngeal structures. Nevertheless, the writer feels that while the inevitable nature of the pathological process plays a very important part in all cases, at the same time traumatism and injury by instrumental means for the relief of the stenosis also adds largely as a contributing factor. The writer, for sake of convenience, has classified the pathological lesions as supraglottic those above the cords, and infraglottic to the changes which occur below the cords.

The following pathological lesions are usually present in the great majority of cases with retained intubational tubes or tracheal canula

- a Edema
- b Polypoid masses
- c Decubitus ulcers Intubational or canula
- d Paralysis (Crico-arytenoid fixation)
- e Perichondritis
- f Chondritis
- g Metaplasia
- h Endochondral bone formation

*a Edema*—Edema when supraglottic usually involves the glosso-epiglottic fold and the ventricular bands. It is usually anterior and is caused at times by the head of the intubation tube being too large or angular where it joins with the neck of the tube. The aryepiglottic folds and the arytenoid cartilages may also show signs of marked infiltration and become enormously tumescent. The edema is somewhat similar to the ordinary types of laryngeal edema due to other infectious causes, but it is much more firm and has a tendency to close the laryngeal lumen and cause much more difficulty with inspiration than with expiration.

This form of inspiratory dyspnea is largely due to the greatly thickened ventricular bands which come together as soon as the tube is removed and they are sucked inward and almost completely closed with each attempt at inspiration. When the edema also involves the arytenoid cartilages it is a useless procedure to attempt to remove the intubation tube for the supraglottic and arytenoid edema will necessitate immediate reintubation. When the cause is due to the head of the tube, the head should be changed and a very flat head tube introduced so that the narrow neck of the tube comes in contact with the ventricular bands and relieves pressure in that locality.

Gentle galvanic puncture will also be of great aid in relieving this condition

When edema is confined to the subglottic region the galvanic cautery will not only relieve this condition and make it entirely disappear, but will invariably cure the great majority of cases. With care the cords should not be cauterized and the small scar that remains in the cricoid does no harm nor is there subsequent contraction following once the scar has healed. The writer does not perform trichotomy as a preliminary measure when the subglottic space is to be cauterized. He prefers using a small tracheoscope with a long slanting end and the very fine cautery is introduced through the tube and is controlled under direct vision. As there is always some reaction following the cauterization he prefers reintubating the patient, using a tube with a very flat head and a narrow neck with an olive bulbous tracheal retention swell. So far with this method the writer has had great success and has seldom failed to cure a case of subglottic stenosis, though many of them require repeated applications of the crutery before they remain permanently cured.

The great advantage of the tracheoscope is, first, that one is able to make application directly to the subglottic space, and secondly that respiration is not obstructed and the child breathes quite naturally while the application is being made.

In tracheal fistula cases edema may occur in a manner quite similar to that encountered in the larynx, and therefore, make final decanulation difficult. Cauterization through a tracheoscope from the tracheal fistula upward will greatly decrease the edematous spur formation and be of material aid in the final cure of the case.

*b Polypoid masses* may be supraglottic in retained tube cases, but are also found in the cricoid region, especially following perichondritis. They also occur in the trachea at the site of a tracheal fistula as villous polypoid masses. These polypoid masses are composed of new connective tissue and are freely supplied with blood vessels and are very vascular.

When they are supraglottic they become very edematous and act in a similar manner as supraglottic edema by causing immediate obstruction to respiration. Polypoid tufts are most frequently found on the ventricular bands and the base of the epiglottis. They may fill in the whole of the anterior portion of the larynx. They are very firm and fibrous and at times difficult to remove en masse. At times there are small bunches of this tissue with a single blood vessel as the stem. These are easily removed with the forceps or snare. In any case all of these polypoid masses should be removed and the base cauterized by the galvanic crutery.

*c Decubitus Ulcers*—These so-called "bed-sore" ulcers, due to the intubation tube or tracheal cannula are rather rare in the writer's

experience when a proper fitting and smooth under sized intubation tube or tracheal cannula are used, no matter how many times they have to be changed. They do occur, however, and are rather frequent, especially in the severe cases in hospital practice complicated by persistent auto-extubation of the tube, especially when over size tubes with a large retaining swell are used with an endeavor to stop the constant coughing up of the tube. The writer's non cough-up tubes with a bulbous tracheal swell will in every instance put a stop to persistent auto-extubation, and at the same time cause no pressure on the cricoid cartilage in which locality these ulcers are most frequent.

*d Paralysis (Crico arytenoid fixation)*—Post-diphtheritic paralysis of the motor nerves of the larynx is an extremely rare condition. In many cases crico-arytenoid fixation and infiltrations binding down the cords have been mistaken frequently for paralysis and recorded as such. Dr Ira Van Gieson and the writer were able to definitely prove by histological sections of the recurrent laryngeal nerves that there was no involvement of the trunk of the nerve as it entered the larynx, nor was there round cell infiltration or thickening about the muscular branches. In over fifty cases in whom there had been extensive perichondritis at the cricoid level, the trunk nerve and the muscular branches were found to be normal from the histological findings. On the other hand Dr Archibald Dickson and the writer examined clinically by direct means 100 cases of severe nasal and pharyngeal diphtheria with post-diphtheritic paralysis, and in each instance the motor nerve of the larynx was seen to be in good working order. The superior laryngeal was involved, however, in 90 per cent of the cases, and the speculum and bronchoscope could be passed without discomfort to the patient, for there was profound local anesthesia present quite similar to that produced by cocaine. The great majority of the cases examined were in adults. These patients had considerable difficulty in coughing up thick tenacious mucous which would collect in the larynx, for the explosive cough reflex was lost. The act of coughing was accompanied by a prolonged nasal grunting sound at each effort to expel the secretion. There is a vasomotor paresis probably of the lung as well in many of these cases, and their inability to expectorate secretion causes a damming back of secretion in the lung and the patient succumbs to a terminal pneumonia. To use the words of Jackson, "the patient practically drown in his own secretions."

*e Perichondritis and Chondritis*—In the severe types of diphtheria perichondritis and chondritis especially at the cricoid level are the chief factors in causing the persistent coughing-

up of the intubation tube. Frequently perilaryngeal abscesses give the first warning that the cartilage is becoming destroyed and the infection has involved the crico-thyroid lymph node. Following this the tube may be rapidly dislodged and it is not infrequent to have a tube coughed up as many as 10 times during the 24 hours. In one instance the writer recorded a case where the tube had been auto-extubated as many as 32 times in 24 hours. Tracheotomy was finally performed, but the child passed away the following morning. The whole larynx was one mass of slough, and very little cartilage remained to show where the larynx once existed. In the great majority of the histories of chronic post-diphtheritic laryngeal stenosis one will find that there has been a period from the first to the fourth week after the primary diphtheritic infection that auto-extubation has been persistent. The severe cases who recover or rather are tided over this period of auto-extubation invariably become chronic. Unfortunately many of them succumb to broncho pneumonia, which are, in fact, foreign body pneumonias from the aspiration of infectious sloughs which have gone into the lung. After the destruction of the cartilage, the thin areas of the muco-perichondrium which remain endeavor to build up the support at the cricoid cartilage and nature's process of repair converts the cricoid ring into one of partial bony development.

*g Metaplasia*—In the thyroid cartilage it was not infrequent for Dr. Van Giesen to find areas of metaplasia with new formations projecting into the lumen of the larynx. In other words, there may be metaplastic bony spurs projecting into the lumen. The ankylotic crico-arytenoid joints are frequently of bony origin, especially where there has been destruction of the posterior segment of the cartilaginous ring.

*h Endochondral Bone Formation*—Metaplastic and endochondral bony formations occur in almost all of the cases when there has been extensive chondritis and perichondritis.

In four specimens of chronic stenosis we found bony deposits in all of the cartilages, and in one there was a complete regeneration of the cricoid cartilage by a metaplastic and endochondral bony ring.

The muscles of the larynx, strange as it may seem, are all intact, but they show some myositis, but not to the same degree as one would suppose after having read the rather complex pathology.

In spite of the many changes which occur in the larynx in post-diphtheritic laryngo-tracheal stenosis I believe that all of the cases are not hopeless and that the great majority of them, if not all of them, if given sufficient time and patience can be cured.

For the hypertrophic supraglottic and subglottic types galvano-caustic applications will be

of the greatest aid. All of the different types should be studied by direct means, and one should never attempt to examine the larynx in any case of stenosis unless everything is prepared for an emergency, that is, he must have suitable bronchoscopes, tracheotomy instruments, and digital intubation apparatus at hand should direct measures fail.

As a rule, however, it is not a difficult procedure to examine the larynx and remove an intubation tube through the writer's direct intubation speculum as well as to replace it if necessary, but no case is ever examined unless everything is in readiness for an emergency.

Intubational dilatation has been very successful for the hypertrophic and cicatricial types, but great care is necessary not to over dilate the larynx, as perichondritis may result. For cicatricial webs, especially with not more than one millimeter of space for breathing purposes, Dr. Gover and the writer prefer performing tracheotomy first before any attempt is made by endolaryngeal treatment. After tracheotomy we have had good results by the use of tracheoscopic cauterization both from above downward and from the tracheal fistula upward.

In cases with dense masses of fungating polypoid tissue in the region of the cricoid cartilage, or with a complete laryngo-tracheal stenosis, or extensive destruction of the cartilage, laryngotomy is the best means of curing the case.

It has always been the rule of the writer to try all of the simplest methods to cure the individual case before and radical procedure was attempted. The great majority of our cases have been cured after some endolaryngeal methods and gradual dilatation. We have also employed soft rubber intubation tubes which have proven satisfactory, as the soft rubber as first recorded by Killian, has a beneficial effect on scar tissue.

*The Voice*—The voice, in the experience of the writer, has been much better in all cases treated by intubational dilatation, provided narrow-neck tubes are used also to allow for motion of the cords and prevent crico-arytenoid fixation, than it has ever been following laryngotomy.

This is, therefore, one of the main reasons why intubational dilatation is given a thorough trial first. Again, in closing, I wish to emphasize the fact that I believe all of the cases of chronic stenosis of the larynx can be permanently cured, but much time and patience is required frequently before the desired result is accomplished.

#### DESCRIPTION OF PLATES

Fig 1 Shows the whole of the cavity of the larynx covered with a thick diphtheritic exudate. The patient, a man, was admitted to the hospital in extremis, and was tracheotomized by Dr. Harold Steele. Should the case have recovered he would have undoubtedly become one of the

chronic retained canula types, owing to the enormous amount of infiltration and destruction of the laryngeal structures

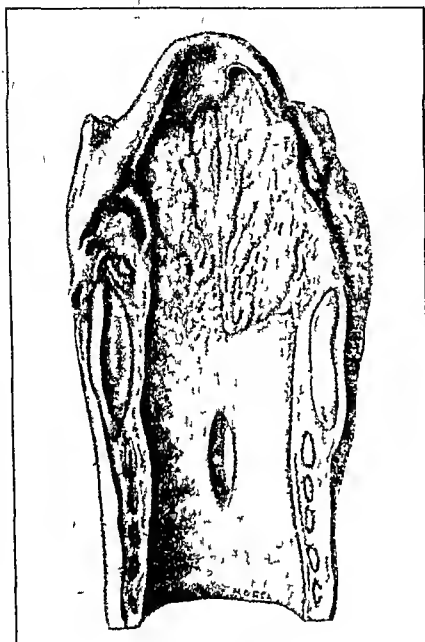


FIG 1

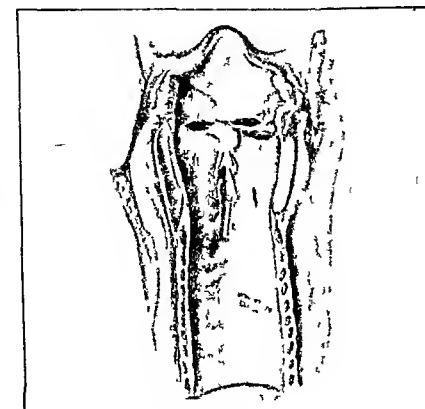


FIG 2

Fig 2 Demonstrates one of the unfortunate traumatic false passages, showing a complete fracture of the cricoid cartilage. Also note the so called high tracheotomy for the relief of dyspnea after the accident

Fig 3 Shows one of the terrible causes of the great majority of cases of laryngeal stenosis. There is marked perichondritis and chondritis of



FIG 3

the cricoid cartilage with portions sloughing out and falling into the lung and causing a foreign body pneumonia and termination of the patient

Fig 4 Shows a transection of the thyroid cartilage in a case of chronic laryngeal stenosis just above the vocal cords. Note the metaplasia of the cartilage with a projection into the lumen on the right antero-lateral wall. The muscles are present but show some myocytosis. The arytenoid cartilages show bony changes and the left



FIG 4

arytenoid is dislocated and does not show in the specimen. A dense mass of new connective tissue surrounds the lumen.

Fig 5 (a) Shows a histological section taken from the gross specimen in Fig 3. Note the dense mass of necrotic material and slough of cartilage in the lumen. In the lower left hand corner will be seen the recurrent laryngeal nerve and its branches as it enters the larynx.

(b) Shows a transection of the trunk nerve and branches, all of which are perfectly normal. There is a slight amount of round cell infiltration in the connective tissue about the nerve, but the bundles show no sign of involvement.



FIG 5A

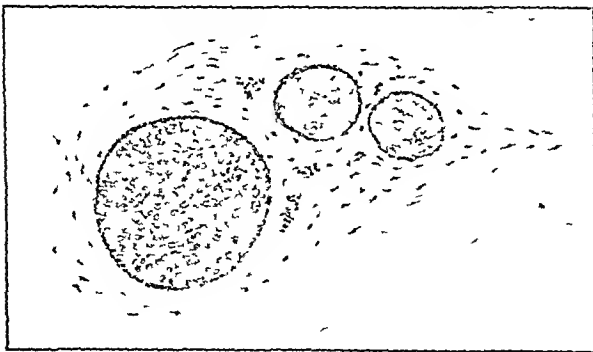


FIG 5B

Fig 6 Shows a schematic drawing to represent one of the writer's methods in curing persistent tracheal canula cases. (a) Shows the tracheotomy tube covered with soft rubber to

prevent granulations, and also the spur formation closing the lumen above the canula. (b) Represents the angle which an intubation tube will take when there is a marked hump on the posterior tracheal wall. The tube will ride over the spur and appear in the wound. This can be overcome by cauterization and gentle pressure as the tube reaches the tracheal fistula. (c) Shows the corking of the tracheal wound after the tube has been properly introduced. An ordinary commercial rubber stopper is used and made to fit the tracheal fistula so that it can be kept open in case of emergency.

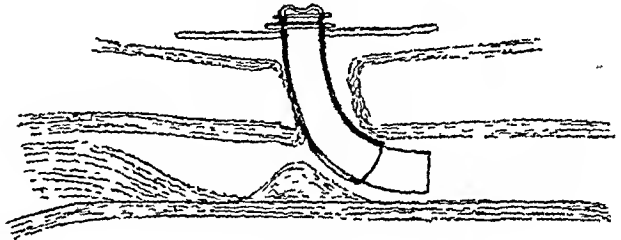


FIG 6A

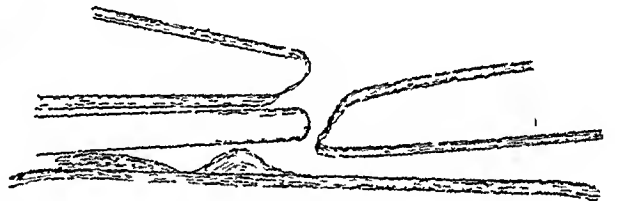


FIG 6B

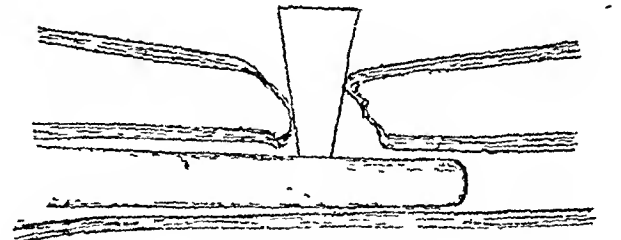


FIG 6C

Fig 7 Shows a series of the author's dilating tubes for use in the hypertrophic, supraglottic and subglottic types or stenosis.

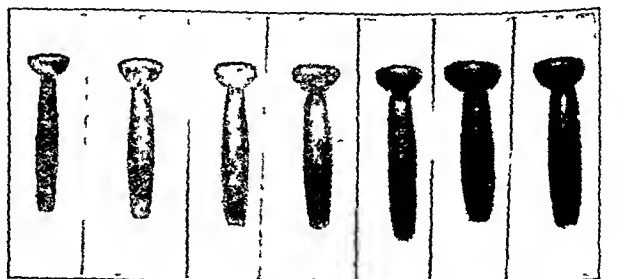


FIG 7

## DIPHTHERIA IN NEW YORK STATE \*

By FRED M MEADER MD

Director Division Communicable Diseases, New York State  
Department of Health

THERE is no disease about which more is known than diphtheria. Facilities for combating the disease are easily available and yet last year there were reported 19,133 cases with 1,518 deaths. The question arises why is it that our methods are not more effective? This paper will attempt to present facts which show the general trend of the disease in this and other states during a considerable period of years. Then we shall endeavor to locate the chief places of distribution in this state and then to indicate in a few words suggested procedures to check the spread of the disease.

## THE DEATH RATES FROM DIPHTHERIA IN VARIOUS STATES

The following table indicates the number of deaths and the death rate per 100,000 people from diphtheria in New York City and the remainder of the State from 1885 to 1915.

It will be apparent that something happened in New York City during 1897 and in the remainder of the state the following years. This something that happened was the general introduction of Diphtheria Antitoxin.

TABLE I

DEATHS FROM DIPHTHERIA IN NEW YORK CITY AND  
REST OF STATE 1885-1915

New York City		Rest of State	
Deaths	Rate per 100,000	Deaths	Rate per 100,000
1885	3 012	1 496	429
1886	3 874	1 723	491
1887	4 309	2 181	619
1888	3 864	2 584	728
1889	3 759	2 096	587
1890	3 045	1 870	520
1891	3 149	1 923	527
1892	3 251	2 667	721
1893	3 410	2 537	676
1894	4 545	2 047	547
1895	3 410	1 579	418
1896	3 073	1 524	397
1897	2 569	1,546	397
1898	1 778	834	221
1899	1 924	862	227
1900	2 277	1 029	268
1901	2 068	958	246
1902	2 015	844	214
1903	2 190	845	212
1904	2 048	993	246
1905	1 544	752	184
1906	1 895	793	191
1907	1 740	863	205
1908	1 758	715	168
1909	1 714	599	139
1910	1 715	718	165
1911	1 281	682	155
1912	1 125	499	112
1913	1 333	520	115
1914	1 491	524	115
1915	1 278	473	102
1916	1 031	487	

## MICHIGAN

The following table indicates the number of deaths from diphtheria from 1884 to 1912. The number of cases reported, the number of deaths and the rate per 100,000.

Antitoxin was introduced into this country about 1894. There were on an average between 1884 and 1893 incl 3,909 cases with 913 deaths annually. From 1894 to 1912 the average number of cases reported was 3,231 with 549 deaths annually.

TABLE II

MICHIGAN

DIPHTHERIA CASES AND DEATHS PER 100,000 POPULATION  
1884-1912

Year	Population	Cases Reported	Deaths	Per 100,000	
				Case Rate	Death Rate
1884	1 853 658	3 915	905	211.2	48.8
1885	1 893 697	4 018	964	212.2	50.9
1886	1 933 735	4 244	982	219.4	50.8
1887	1 973 774	3 382	825	171.3	41.8
1888	2 013 812	2 228	532	110.6	26.4
1889	2 053 851	3 157	683	153.7	33.3
1890	2 093 889	4 206	1 050	200.9	50.1
1891	2 130 827	4 385	1 002	205.8	47.0
1892	2 167 765	4 818	1 099	222.3	50.7
1893	2 204 703	4 736	1 092	214.8	49.5
1894	2 241 741	3 852	744	171.8	33.2
1895	2 271 531	3 433	708	151.1	31.2
1896	2 301 421	4 013	757	174.4	32.9
1897	2 331 311	4 132	756	177.2	32.4
1898	2 361 201	2 357	477	99.8	20.2
1899	2 391 091	2 154	435	90.1	18.2
1900	2 420 982	2 706	528	111.8	21.8
1901	2 450 872	2 498	493	101.9	20.1
1902	2 475 499	2 993	500	120.9	20.2
1903	2 502 758	3 670	569	146.6	22.7
1904	2 530 016	3 510	538	138.7	21.3
1905	2 557 275	2 159	465	84.4	18.2
1906	2 584 533	3 648	453	141.1	17.5
1907	2 611 792	2 935	388	112.4	14.9
1908	2 639 050	2 658	327	100.7	12.4
1909	2 666 309	3 109	397	116.6	14.9
1910	2 810 173	3 433	454	122.2	16.2
1911	2 856 866	3 762	443	131.7	15.9
1912	2 903 559	3,294	465	113.4	16.0

## MASSACHUSETTS

Records extend back to 1896

Here again cases have remained fairly high, but deaths dropped off in 1898 to less than half the previous year.

TABLE III

MASSACHUSETTS

DIPHTHERIA CASES AND DEATHS PER 100,000 POPULATION  
1896-1913

Year	Population	Cases Reported	Deaths	Per 100,000	
				Case Rate	Death Rate
1896	2 558 443	8 515	1 348	332.8	52.7
1897	2 618 051	7 613	1 107	290.8	42.3
1898	2 679 049	3 980	507	148.9	18.9
1899	2 741 470	7 134	758	260.2	27.6
1900	2 805 346	12 641	1 274	450.6	45.4
1901	2 870 710	9 793	1 166	341.1	40.6
1902	2 937 600	7 036	873	239.4	29.7
1903	3 006 040	6 888	869	229.1	28.9
1904	3 076 083	6 772	699	220.2	22.7
1905	3 003 680	5 059	652	168.4	21.7
1906	3 044 998	7 967	743	261.6	24.4

TABLE III—Continued

Year	Population	Cases Reported	Deaths	Per 100,000	
				Case Rate	Death Rate
1907	3,086,885	9,098	752	294.7	24.4
1908	3,129,348	8,939	747	285.7	23.8
1909	3,172,395	8,795	694	277.2	21.9
1910	3,366,416	7,390	679	219.5	20.2
1911	3,444,059	6,998	563	203.2	16.3
1912	3,523,493	5,433	473	154.2	13.4
1913	3,604,759	6,741	628	187.0	17.4
1914	3,594,266	8,080	652	224.8	18.1
1915	3,779,033	9,282	721	245.6	19.0

## PENNSYLVANIA

I have not been able to obtain figures from this state except for the brief period of 1906 to 1912. The number of cases reported has increased during this period on account of better reporting. However, the deaths have remained fairly constant in amount.

TABLE IV

## PENNSYLVANIA

DIPHTHERIA CASES AND DEATHS PER 100,000 POPULATION  
1906-1912

Year	Population	Cases Reported	Deaths	Per 100,000	
				Case Rate	Death Rate
1906	7,141,766	10,870	2,438	152.2	34.1
1907	7,279,792	10,510	2,138	144.4	29.4
1908	7,417,816	12,509	1,970	168.6	26.6
1909	7,555,841	13,133	2,002	173.8	26.5
1910	7,693,866	14,061	2,235	182.8	29.0
1911	7,831,904	16,096	2,111	205.5	27.0
1912	7,969,942	16,617	2,042	208.5	25.6

From the above tables it is apparent that the amount of diphtheria has remained practically the same but the number of deaths has been considerably reduced.

It is of interest to us in New York state to note where the disease prevails most extensively. Of the 19,133 cases reported in 1916, 13,521 cases were reported in New York city, leaving 5,612 cases in the remainder of the state.

70.6 per cent of the cases reported were from New York city where there is 54.3 per cent of the population. At first thought it might appear that the disease was better reported in New York city, but a comparison of the fatality rates indicate that the per cent of deaths among the reported cases is nearly the same, namely, 7.6 per cent in New York city and 8.6 per cent in the remainder of the state, so that it is probable that they are nearly as well reported upstate as in New York city.

When we inquire where in the state, exclusive of New York city, the disease prevails most extensively, we find that 64 per cent of the cases reported in the cities and 35.8 per cent from the rural sections. The population is nearly equally divided between urban and rural being 48.6 per cent in the former and 51.3 per cent in the latter. Here again according to the fatality rate the reporting must be fairly equal. The percentage of deaths among reported cases in the cities is 8.8 per cent and in the rural sections 8.3 per cent.

It is apparent then that the cities of the state are the places where diphtheria is most prevalent. This statement however, must be analyzed further to be correct. Some cities may have a very good record and some rural sections may have a bad record.

The case rates per 100,000 people in the cities of the state exclusive of New York city for 1916 was 157. Of the 60 cities 19 of them have rates above 157.

TABLE V

## DIPHTHERIA

City	Case Rate per 100,000 Pop
Binghamton	636
Middletown	578
Glens Falls	550
Saratoga	456
Lackawanna	406
Hornell	386
North Tonawanda	311
Cortland	303
Syracuse	241
Niagara Falls	239
Peekskill	218
Ogdensburg	209
Ossining	208
Fulton	204
Tonawanda	203
White Plains	187
Poughkeepsie	184
Cohoes	181
Yonkers	164

## DIPHTHERIA IN RURAL COMMUNITIES

A study has been made of the report cards sent into the Department during the year 1915. 2,683 records have been carefully examined. In some instances the information was incomplete but in 1,458 cases information was available which would show the time in days between the onset of the disease and the day on which the first of the two successful negative cultures were obtained. The following table summarizes this information.

THE NUMBER OF DAYS DURING WHICH DIPHTHERIA ORGANISMS PERSISTED IN THE THROATS OF PATIENTS THE PERIOD FROM ONSET TO THE TIME WHEN THE FIRST NEGATIVE OF TWO SUCCESSIVE NEGATIVES WERE OBTAINED—TOTAL NUMBER, 1458

Number of Days	Number of Cases	Number of Days	Number of Cases
1	43	15-19	160
2	28	20-24	174
3	23	25-29	152
4	26	30-34	124
5	22	35-39	84
6	37	40-44	82
7	43	45-49	51
8	46	50-54	26
9	41	55-59	20
10-14	189	60-64	14

It will appear that in quite a number of cases the organisms disappear from the throat very shortly after the onset of the disease but in the larger number of instances they disappear between 10 to 35 days and most extensively during the period of 10 to 15 days.

DAY OF DISEASE ON WHICH ANTITOXIN WAS ADMINISTERED TO CASES OF DIPHTHERIA IN NEW YORK STATE EXCLUSIVE OF NEW YORK CITY IN 1915—NUMBER OF CASES REPORTED 1329

Day of Disease	Number of Cases	Day of Disease	Number of Cases
1	383	9	5
2	541	10	4
3	219	11	
4	87	12	1
5	40	13	3
6	25	14	1
7	13	15	1
8	6		

The cards were again studied to determine the date of the disease on which diphtheria antitoxin was for the most part administered. 1,329 reports were completed. This information is prepared on the above table. It will be noted that the largest number of cases were treated on the second day of the disease, a considerable number on the first day and for the most part during the first four days.

DOSES OF ANTITOXIN GIVEN TO CASES OF DIPHTHERIA IN NEW YORK STATE EXCLUSIVE OF NEW YORK CITY IN 1915

Units of Antoxin	1500	2500	3000	5000	6000	9000	9000
Number of Cases	137	6	1220	95	424	80	120

The amount of antitoxin given is noted in the above table. 3,000 units were given to the largest number of cases. This is probably on account of the standard dose of 3,000 units. Quite a large number of doses of 6,000 units were also given and in 120 instances over 9,000 units were given.

CASES ATTRICTED WITH DIPHTHERIA—TOTAL NUMBER 2683

Age Years	Number of Cases	Age Years	Number of Cases
1	19	25-29	127
2	45	30-34	95
3	125	35-39	71
4	169	40-44	59
5	153	45-49	29
6	176	50-54	20
7	188	55-59	10
8	214	60-64	5
9	155	65-69	5
10-14	138	70-74	
15-19	204	75-79	3
20-24	222	80 over	
	151		

The above table indicates the age of the patients. 2,683 cases are covered in this table, 124 cases were 2 years of age, 169 were 3 years, 153 were 4 years, 176 were 5 years, 188 were 6 years and 214 were 7 years of age. From this table it will therefore appear that children in the school age particularly young children are the most susceptible to the disease.

This fact is further borne out by a study which was made relative to the occupation of patients. 931 were students, 263 were employed in housework, 55 laborers and 31 servants, etc.

From the above mentioned tables it will appear that this disease is very important as a disease of childhood, so that health officers and physicians should devote considerable attention to the schools and communities of which they have charge. Diphtheria antitoxin, if given early, saves lives in most instances and the importance of this procedure should not be overlooked. During the year a few unfortunate instances have occurred on account of health officials permitting their supply of culture tubes to become exhausted. It is therefore urged that a good supply be kept on hand and that a sufficient supply of diphtheria antitoxin be always available.

WHAT CAN BE DONE TO CHECK THE SPREAD OF DIPHTHERIA

Apparently the reason why this disease has persisted in the past despite the amount of information which we have concerning the disease is the role which diphtheria carriers have played in the spread of this disease. Their existence has not been recognized until comparatively recently and it is only until recently that attempts have been made to control this source of infection. The control of diphtheria carriers is one of the difficult public health problems which we have at this time. The question of treatment and isolation is very important. The most effective method so far as devices to cure a diphtheria carrier, is to remove the tonsils. The Department is trying various other methods, but so far removing the tonsils is the most effective.

In regard to quarantine of diphtheria carriers, it is important that they have nothing to do with milk supplies or handling of foods which are to be consumed raw. They should not be rigidly quarantined in a room by themselves but should be kept from public assemblies, conveyances and away from other children who might become infected with diphtheria.

Recently Park and Singer have developed the Schick Test which enables one to determine whether or not the person has natural immunity against diphtheria. If this test is applied to those who are exposed, the information is obtained which indicates those who should be immunized. If this procedure is carried out in schools at the beginning of the school session, it will be possible to know before hand what children are especially susceptible to the disease.

Park and Singer have also developed the toxin antitoxin method of treating those who are not immunized which promises to be an important method in controlling this disease.

A summary of the foregoing paper should note particularly that diphtheria is about as generally prevalent now as it ever has been, but that the deaths have been rapidly reduced on account of the use of diphtheria antitoxin.

Second the cities of the state apparently have a larger proportion of cases of diphtheria than do rural sections.

Third, the disease is most prevalent among children of school age

Fourth, the control of diphtheria carriers is one of the most important measures that can be prepared to reduce the general prevalence of this disease

Fifth, in view of the fact that organisms disappear from the throat of diphtheria patients, for the most part between the 10th and 15th day of the disease, it would simplify to a considerable extent our laboratory work if the first day on which the first culture for termination was taken on the 10th day of the disease

Sixth, the use of the Schick Test is of value in determining those who should be immunized in the presence of an outbreak and the toxin antitoxin treatment promises a method of treating non-immune children so that active immunity develops against this disease

### Discussion

DR FREDERICK W SEARS, Syracuse I just want to emphasize a few points in Dr Meader's paper First I think we should fix some minimum period of isolation and not depend entirely upon two negative cultures for release I have recently had an experience which confirms my views upon this matter

We had a case of diphtheria in one of our general hospitals and the nurse who took care of this patient became affected with the disease These cases were removed to the City Hospital About three weeks later, two other cases developed diphtheria in this hospital Cultures were then taken of all people in the hospital including the patients, nurses, orderlies and cook and five carriers were found These included two nurses, one cook, a maid and a ward patient These cases were isolated at the City Hospital until released on two negative cultures being obtained The cook, the nurses and the maid were then advised to take a week's vacation and before returning to the hospital should have culture taken of their throats in our city laboratory to determine if they were still negative Both nurses were found to be positive at that time and the cook refused to be examined It was impossible to secure negative culture from one of the nurses until she had her tonsils removed The cook was not taken back into the hospital, but returned several months later and applied for her old position, which was refused her unless she submitted to throat culture, which was taken and found positive On investigation of the house where she was boarding we found that a contact case showed positive culture We cannot be too careful of chronic carriers

In regard to controlling the disease in our schools, I believe that we should devote the early part of the school term to searching for disease carriers and allow the physical examinations to be done later I am sure that if this were done

it would reduce the school cases very materially The old idea that when a case of diphtheria is found in a school room we should close the school and fumigate the room should be relegated to the past with other ideas that we have outgrown When we find a case of diphtheria in a school room we should take cultures from the four children who are seated nearest the case This would include the children immediately in front, on each side and back of the one affected This disease is spread undoubtedly by contact direct or indirect and by culturing those most likely to have come in contact with the cases By isolating these cases early we would, in most instances, eliminate any other case affected in the room

It is also necessary to have convenient laboratory facilities We should have a laboratory in every county in the state and convenient facilities for the taking of cultures and the distribution of antitoxine

DR T W JENKINS, Albany One has more trouble trying to keep children quarantined than in anything else It is very irritating to people to have a child kept under quarantine when they think the child is well and they get very angry at times They cannot understand why you come time and time again and make cultures and will not let the child out I think a minimum time should be arranged and perhaps, instead of every day, going once a week to take cultures, I think we could get along better with the people if we did this

DR CHARLES S PREST, Waterford I believe that in the schools it would be better to begin tomorrow than next September My feeling is very strong that we should require the Schick test and the toxin-antitoxin immunization in the case of susceptible children We have had a very strenuous time in Saratoga and Glens Falls where we found a number of carriers and things threatened to be very serious The removal of the tonsils is usually the best way of eliminating the carrier condition As you know Park and Zingher have had three years' experience with the toxin-antitoxin and recommend it How this would be received by the parents I do not know, but I think it would be a good plan to anticipate the introduction of the toxin-antitoxin immunization by an educational campaign It would be better if we could have prevention, the difficulties of isolation and control are recognized by all

There is one other point that Dr Park emphasizes and that is the great need of giving large doses of antitoxin first, no second dose, but a large first dose and given intravenously rather than subcutaneously, if permitted, and then immediate results will accrue

DR HALSEY J BALL, Glens Falls Permit me to emphasize what has been said with reference to the advisability of taking cultures from the chil-

dren who have seats surrounding a pupil who has developed clinical diphtheria. Where pupils pass to class rooms from a general assembly hall, the surrounding pupils, those on either side and in front and behind, in each class room should be cultured as the pupils in one class room may have been infected while those in another room may have escaped infection by reason of immunity or a lack of contact. In one of the Cortland schools, three pupils coming together in the Latin class had diphtheria, also a baby brother, and the mother of two pupils in the same class, the five pupils being grouped together, but other pupils coming in contact with these five in other classes did not have diphtheria. In schools where there is no general assembly hall and each class assembles by itself, the outbreak is usually limited to that room and cultures need only be taken from those surrounding the case, and the chum or special playmate

DR T F FOREMAN, Syracuse. The advisability of taking cultures in all cases of sore throat has been impressed on me by finding diphtheria in many cases where it has not been suspected. One case came under my observation in which a patient had a slight sore throat with no membrane but I took a culture and the day following he had a slight membrane in the throat. The culture came back positive. I feel that if I had not made the culture I should have said he had a tonsillitis. If I had waited until the next day to make the culture and then wait for a report I should not have been able to administer the antitoxin so early. We should make cultures in all suspicious cases and give antitoxin early in order to relieve them.

DR GEORGE W GOLER, ROCHFESTER. What Dr Meader has said is, in the main, very true. We know more about diphtheria than about any other infectious disease, yet one of the disgraceful things about it is that men will not realize that antitoxin must be given early and in large doses. They wait and wait and in a severe case ask if 3,000 units is enough. When they ask me that question I tell them what they want is a coroner. We have tried as far as possible to emphasize the necessity of giving large doses of antitoxin and of taking early cultures, cultures made with bruns and not only with swab. Getting one negative culture is not doing our whole duty and giving some serum is not the end. Some years ago before antitoxin they were doing tracheotomies, Dr Jacoby said he did a tracheotomy not to save the life of a child but permit it to die easier. To make an early diagnosis and to give antitoxin early and in large doses is to do one's duty.

We are often called up by people who want advice, and who want to know whether it is

necessary to call up a physician. We sometimes advise these people in stronger language than the telephone wire is accustomed to carrying. We have tried to advise parents in this respect, and more especially in regard to children under school age. In children in the schools we should not only make a culture of the child in front and behind and at the sides, but of all children in the grade and it has been our experience that when this is done we seldom fail to find one or more carriers. It is time we examined school children to find diphtheria carriers instead of wasting time in demonstrating defects that are perfectly evident. We should make the Schick test, and where we find children susceptible to diphtheria we should give the toxin antitoxin vaccinations to as many children as we can get the permission of the parents.

DR FRED M MEADER, Albany. I would like to ask Dr Goler what his case rate is. The average for the State is 57 for 100,000. Careful work is producing a falling in the case rate.

In the Boston City Hospital they do not let a patient out after an attack of diphtheria until they get six negative cultures in succession. In one instance they kept one patient there nearly a year before they got the six negative cultures. Sometimes there will be five negative cultures and then the sixth will be positive. When we get two negative cultures it does not mean that the organisms have entirely disappeared, but this is about as practical a health measure as we can get and apply. I had one carrier with one spongy tonsil. The tonsils were removed in this case and on examination no organisms were found in the spongy tonsil as one might have expected, but a number of colonies were found in the epithelium of the normal tonsil. One may sometimes make a number of examinations and not happen to strike a colony and then perhaps a few minutes later he will happen on a colony.

## FLOATING KIDNEY—NEPHROPEXY \*

By SAMUEL LLOYD, M.D.,  
NEW YORK CITY

IN looking up the literature some time ago on the question of movable kidney, I was surprised to find how little attention had been given to this subject in the ordinary text books, and I was still further surprised to note that in the fifth volume of the "System of Practical Surgery" by von Bergmann translated and edited by William T. Bull, on page 253, the statement is made that the method which is now considered the best is that recommended by Lloyd and con-

sists in a partial decortication and subsequent suture of the kidney. This is all that is said in regard to the technique, and even that is inaccurate, so that it seemed to me it was worth while at the present time to say a word on this subject, and to describe the technique that I have used for the past twenty years or more, so that it might become a matter of record.

In the first place it should be emphasized that a floating kidney is a distinct clinical entity. I do not mean by that to claim that every case of movable kidney should be subjected to operative interference, nor do I mean to contradict the statements that have been made by many of the medical authors that this condition often exists without the patient being conscious of it, and without her suffering from any symptoms that would seem to be attributed to the malposition of the organ. Double movable kidneys I do not consider operable. These cases are almost invariably associated with general enteroptosis, and one cannot expect to get the other abdominal organs back into position by the operation of a double nephropexy. These cases are simply a part of a general constitutional condition, and the remedy must be one that will take care of all the other organs as well as of the kidneys themselves.

As a general rule, the kidney at fault is the one on the right side, and it is usually described as being movable in the first, the second, or the third degree. It seems to me that this is as accurate a statement of the degrees of motion that one finds in a kidney that has broken away from its moorings, and that one can obtain a fairly definite idea of the amount of damage that this kidney is doing by determining the range of its motion. A movable kidney,—one of the first degree,—will usually allow the examiner with one hand placed in the lumbar region just to the right of the erector spinae muscle, with the other hand compressing the abdomen just below the last rib,—to feel the kidney come into the grasp of the two hands for about one-half of the organ. A kidney of the second degree will come down so that the examiner may feel the upper pole just below the last rib, but it descends in a straight line and immediately returns to its position if the patient is recumbent, as soon as the diaphragm is relaxed. When it is of the third degree, it is distinctly a floating kidney, and here we may find it in the pelvis, or even well over into the median line, remaining in its false position even when the patient is recumbent and relaxed. It is in the latter two classes, as a rule, that marked symptoms may be noted. This has been explained as due to the pressure of the dislocated kidney on the duodenum.

Sometimes it is impossible to recognize the fact that a kidney is movable while the patient is still in the recumbent position. If the patient sits

up and bends slightly forward, with the examiner's hands in the same position, and the patient then takes a long inspiration, the organ will be felt to slip down, and by grasping the abdomen in one hand just below the rib, it will be possible to keep it down even when the patient resumes recumbency. These cases, sometimes give very marked symptoms, and account for a number of patients who have been treated without benefit for long years (for stomach disturbances), their medical attendants failing to recognize the fact that the gastric condition was secondary entirely to the nephritic one.

The symptoms in these cases, if they are present at all, are fairly distinctive. If in the course of an examination, however, a movable or floating kidney is observed and yet on careful questioning the patient gives no symptoms that are referable to the condition, it is better that nothing should be said in regard to the displacement of the organ, because patients talk about their ills, and before long a patient who has been told that there was a movable kidney will begin to watch out for symptoms, and will soon become obsessed with the fact that the movable kidney is responsible for every discomfort that he may suffer. Many of these cases are treated for neurasthenia. Nervousness is often a marked sign. Heart disturbance is not unusual. Shortness of breath may be present. A thin person may even become emaciated in the course of time. Gastric disturbances become marked. Heartburn, eructations, water-brash, constipation,—all may be present, for it must be remembered that in many of these cases we find at operation that the kidney is showing a distinct inflammatory process. Sometimes there is also considerable perinephritis, and the symptoms are therefore those that are usually found associated with nephritic toxæmia. It was the recognition of this fact, and the disappearance of the symptoms and the clearing up of the urinary conditions that first led my late partner, Dr Edebohls, to advocate the double decapsulation for Bright's disease.

I have been surprised, with my growing experience in the management of these cases, and with the recognition of the fact that many of the symptoms of which these patients complain are due to a chronic parenchymatous nephritis, probably induced by the changes in the circulation of the organ as it travels around in the abdominal cavity, that the gastro-enterologists have not more often recognized the floating kidney, or even the movable one, with its consequent nephritis, as the cause of the persistent gastric symptoms, and referred the patient to the surgeon for its proper fixation. Perhaps this is because some surgeons believe it is impossible to so fix a kidney that has once become loose, that it will not eventually break away again and in the course of

two or three years cause the same symptoms I believe that when this occurs it is due absolutely to faulty technique. The man who depends upon building up a cicatricial band below the lower pole of the kidney by picking, according to the method of Senn, is bound to be discouraged by his results. He is depending simply upon cicatricial connective tissue formation within a fatty capsule to support a loose and heavy organ, and the same conditions must result as were found so disappointing in the McBurney operation for the cure of hernia.

To get a successful result in the fixation of the kidney, certain definite rules must be strictly adhered to. First, the kidney must be so firmly attached to the lumbar fascia that it will be held in place without depending upon intra-abdominal pressure. In passing, it should be remarked that any one who stops for a moment to consider the mechanical conditions which are present in a floating kidney must be impressed with the fact that pads, strappings or belts can render the patient no true, permanent benefit. The kidney travels down not in the abdominal cavity, but posterior to the peritoneum behind the ascending colon and to apply an apparatus around the abdomen in such a way as to hold this heavy viscus in position would require more pressure than any individual would stand. Intra-abdominal pressure alone can never be made sufficient to retain a wandering kidney in place.

There are a few pathological conditions besides the nephritis and the mechanical kinking of the ureter which have been noted so frequently that it is unnecessary to dilate upon them, which must be mentioned. First, the irritation of the ascending colon. The kidney traveling back and forth along the posterior denuded or peritoneum-free portion of the colon, often produces a mild type of per typhilitis sometimes even communicated to the anterior portions of the colon, causing hicc-like adhesions and sometimes marked congestion. Years ago Edebohl called attention to the frequency of a chronic appendicitis in these cases and our own experience has proven his contention in this regard to be correct. This is particularly true if we have a retrocecal adherent appendix, which is kept irritated by the constant pounding of the kidney against it. This also may in the very loose kidneys which are found down in the pelvis account for the frequency of ovarian disease on this side.

The operation itself must be clean. Every precaution must be taken to provide against the chance of suppuration. The number of incisions for kidney work is legion, and most

of them are of advantage to the man who advocates them and who has become adept in doing his kidney work in this particular way. Thus, the Edebohl's incision, parallel to the outer border of the erector spinae is ideal from an anatomical point of view. We are usually able to readily avoid the nerves, and in small and readily removable kidneys in patients who have sufficient space between the last rib and the crest of the ilium it answers the purpose well. The Kelly incision, parallel to the rib, I have never cared for. It does not give as good an approach, it weakens an already weakened portion of the abdominal wall, and I believe it increases the liability to lumbar hernia, a type of hernia that may be very annoying to the patient and that sometimes causes very marked symptoms. Personally I prefer the incision that I advocated first years ago, starting from the junction of the sacroiliac mass with the rib, and running downward and outward to the posterior spine of the ilium, keeping outside of the sheath of the erector muscle, but close to it, and separating muscle tissue as far as possible by stretching rather than by incision, although never hesitating to cut when it is necessary to get plenty of room. One must be careful during this portion of the dissection to watch for the nerves, and if necessary, to separate them from the surrounding tissues and push them down out of danger. The fatty capsule must then be sought for and recognized. If by chance the peritoneum happens to be pushed up and is opened by mistake—an accident which may readily occur—it may be sutured at once and will not cause any discomfort other than the time taken in its closure. The fatty capsule must be opened freely and, if possible, the kidney should be brought out without touching it with the hands. As a rule the fatty capsule is so adherent by many small connective tissue bands running through it, and attached to the fibrous capsule of the kidney itself that by grasping it with hemostatic forceps and drawing it out gradually into the wound the kidney itself may be made to follow. As soon as the kidney is outside the fatty capsule should be cut away from the fibrous capsule—and all of the loose fatty capsule that can be drawn out should be removed to make sure that none of this tissue may intervene when the kidney is replaced and anchored between it and the lumbar fascia. The fibrous capsule of the kidney is then incised along the convex edge of the organ throughout its whole extent and the capsule is turned back on each side until it is perfectly free. In the course of this procedure one recognizes the condition of the kidney itself, and the expert observer can readily appreciate the amount of nephritis that is present.

Long strands of chromacized catgut with long, curved Hägedorn needles, threaded on both ends, are then employed. The reflected capsule is seized with thumb forceps, and one of these needles is run through it two or three times, getting a grasp of perhaps three-quarters of an inch of the capsule into the needle and the thread drawn through. The two free ends of this catgut suture are then grasped in the haemostatic forceps and laid to one side of the wound. The same procedure is followed with the opposite side of the capsule, and two similar sutures are placed on either side in the reflected capsule near the lower pole. This gives us four sutures in position drawn through the reflected capsule. The kidney is then replaced in position, taking care that the pole that came out of the incision first is the one to go back last, so that there may be no danger of a twisted pedicle.

As soon as the kidney is back in position, the needle attached to one end of one of the superior sutures is loosened from the grasp of the haemostat and passed up inside of the abdomen until one can feel the intercostal space above the last rib, and is then pushed through all the tissues and drawn out through the skin. The other needle on the other end of this same ligature is handled in the same way, the two ends of the ligature lying on the skin about half an inch apart. These are simply grasped in the haemostatic forceps and laid to one side. The suture on the other side of the superior portion of the capsule is then taken care of in the same way. The suture on the inner side of the capsule at the lower pole of the kidney is carried up through all the muscle and the sheath just below the rib, but does not perforate the skin, and the same thing is done with the other end of the suture about half an inch below where the first end transfixed the muscle. The suture on the outer lower portion of the capsule is carried through muscles, sheath, and up to the skin on the outer side of the incision. The kidney is then pushed well up into the position that it is expected to occupy, the lower sutures are drawn taut and tied. This brings the kidney into position, close up to the muscles and with the freshened surface pushing in between the separated muscles themselves.

The incision is closed, layer for layer, without drainage, and a heavy gauze pad is placed over the skin incision. The four ends of the two superior sutures, which have been lying free on the skin during this portion of the operation, are then rethreaded and drawn through the heavy gauze pad, and tied—first making sufficient traction to make sure that the superior pole of the kidney is drawn up firmly against the posterior abdominal wall.

The patient is then turned over, a Kameron

incision is made in front after the usual preparation, the appendix removed, the pelvis explored, and any necessary plastic work done. It will be remembered that Edebohls advocated the removal of the appendix through the kidney incision, but our experience with this method of operation proved to us conclusively that the temporary kink in the ascending colon which was made by this method of operation caused greatly increased abdominal pain, and we had abandoned this procedure some year or two before Dr Edebohls died. In fact some time before he had given up his method of passing sutures through the kidney substance and had adopted my method, because of several unfortunate conditions that resulted from suspension of the kidney by sutures passing entirely through it. I believe it is well, if in the course of the fixation of the right kidney a marked nephritis is found, to immediately proceed to a decortication of the other kidney, because, although we know that a unilateral nephritis may exist, at the same time it is wiser in the presence of a marked disease of the kidney, to be sure of the condition of the other organ.

### SOME COMPLICATIONS AND INCORRECT DIAGNOSES IN UROLOGICAL SURGERY.\*

By OSWALD S. LOWSLEY, A. B., M. D.,  
NEW YORK CITY

**I**N urological surgery we have been accustomed to pride ourselves upon the fact that we rarely have to do exploratory operations. In most instances we are able to correctly diagnose pathological lesions before operation. A number of cases have been called to my attention recently in which through one accident or another there have been mistakes made in diagnoses which have caused us to either do an unnecessary operation or to operate at an improper time.

There is another group of cases which I shall also discuss. They are the ones which arise as complications of urological lesions or as sequelæ to urological operations or investigations.

The ordinary case of stone in the ureter is characterized by terrific paroxysmal pains which usually commence suddenly without reference to the time of day although Keyes notes that they occur most frequently shortly after arising in the morning. I had a patient who passed fifty stones at different times, all of them at night and most of the attacks began on Pullman sleeping cars. The pain radiates down the course of the ureter and into the scrotum and usually to the end of the penis. The testicle on the side involved is frequently retracted. The usual

\* Read before the Buffalo Academy of Medicine, November 7, 1917.

thing is for the patient in such an attack to have a slight rise in temperature which subsides quite promptly as soon as the attack has passed off. Morphine is given to relieve the pain and usually causes a relaxation which is conducive to the stone being passed or becoming quiescent. The period immediately following a renal or ureteral colic is one which should receive the most careful attention. In favorable cases the temperature subsides and the patient is soon able to resume his usual activities. Occasionally the patient will have an inflammation of the kidney which may become serious. A report of such a case follows.

H. A. T., a robust man aged 42, passed a stone from his left ureter eleven years ago, an other one six years ago. Otherwise his previous history was of no importance.

About July 7, 1916, he had a sharp pain in the left loin radiating down the course of the ureter. His family physician, Dr. F. Smith, applied the usual remedies without relief. The pain and distress continued until July 10th at which time I saw him with Dr. Smith. We gave him a big dose of morphine and forced fluids, following which his pain completely disappeared and he was quite comfortable. On July 12th I was again called because the patient had had a rise in temperature to 102 deg. There was no pain, rigidity or mass in the left kidney region. Except for a chilly sensation the patient felt very comfortable. Acid sodium phosphate and hexamethylenamine were being given and fluids forced. The temperature in the next four days varied from 97.6 to 103, making the big daily sweeps which we are accustomed to see in colon bacillus pyelitis. Cultures made from catheterized bladder urine showed pure colon bacillæ. A vaccine was made and injected without result.

A blood count was then made showing a marked increase in the polymorphonuclear leucocytes and blood culture to our surprise showed a remarkable growth of an hemolyzing streptococcus. Ultimately I was able to gain consent for cystoscopy. Examination of the specimen obtained from the left ureter showed a large quantity of pus and contained streptococci. The specimen from the right side was clear and contained no organisms. Phenolsulphonaphthalein test showed a return of 2 per cent from the left and 15 per cent from the right at the end of the first hour and 3 per cent from the left and 17 per cent from the right during the second hour. At this time the left kidney was slightly enlarged, but there was no pain or rigidity and the patient's only complaint was that he felt weak.

During the two hours that the catheters were in place the temperature dropped from 103 to 100 degs., so the one in the left kidney was left in, hoping to drain off the pus and thus relieve the pyelitis in the manner called attention to by Dr. John Calk of St. Louis in a

paper read at the A. M. A. meeting at Detroit in 1916. At the end of twelve hours the urine passing through the catheter had changed from a thick, cloudy fluid to a straw colored hazy substance and the patient's temperature had dropped to 97.8 deg. It remained down for fifty-two hours, and then the patient had a chill with a rise in temperature to 104.8 deg. He was hurriedly prepared and the left kidney removed. It proved to be a polycystic kidney with multiple abscesses of varying sizes. The patient seemed to do well for twenty-four hours following which he went into uremia and died forty-two hours after operation.



FIG. 1—POLYCYSTIC KIDNEY WITH MULTIPLE AREAS OF INFECTION, SOME OF WHICH HAVE FORMED QUITE LARGE ABSCESS AREAS.

This case teaches us that early exploratory operation in a case of continued fever following a renal colic is advisable. It also bears out the contention of Rovsing that nephrotomy is advisable in the event of infections of a polycystic kidney.

The sequence of events in this case evidently was as follows. First a lesion of the kidney, rather mild in character, which produced stones from time to time. Ultimately one of the stones blocked the ureter. This was accompanied by a marked colic lasting three days which dammed back the urine and distended the kidney pelvis. This set up an acute multiple infection of the polycystic kidney which caused the death of the patient by septicemia and uremia.

Attention has been called from time to time by various authors to the dangers of pyeloc-

raphy When collaigol was generally used it was well established by experiment on dogs by Keyes and Mohan that the drug was frequently found in the parenchyma of the organ So many bad results were obtained in the use of collaigol that a number of substitutes were proposed the chief of which were argentide introduced by Young of Boston and thorium citrate by Burns of Baltimore The former has largely been given up because of its irritability At the present time the thorium citrate solution of Burns is the most generally used substance in this country



FIG II—INSIDE OF SAME KIDNEY, SHOWING THE EXTENSIVE NATURE OF THE LESION

Sad experience of the urologist has taught him that forceful injection of any material into the kidney pelvis is fraught with grave danger, so the syringe has given way to the gravity method. Our custom is to use a graduated burette with a small piece of rubber tubing equipped with a tightly fitting needle or other device to connect with the ureteral catheter. The burette filled with thorium is held just above the level of the body and the solution is allowed to flow into the kidney pelvis gradually. As soon as the patient complains of a feeling of fullness in the side the X-ray is immediately taken and the burette lowered to allow the thorium to be expelled through the catheter. We always take a picture before the introduction of thorium, at the time of injection and twenty-four hours afterwards. In this way errors may be eliminated which will be pointed out later.

Pyelography is frequently done in the hope of finding an otherwise invisible stone in the kidney pelvis or ureter. Stone in the kidney and subsequently in the ureter is frequently the result of and is usually accompanied by infection. Distention of such a kidney pelvis either by damming back of urine secreted by the kidney itself as in the case just reported or by the introduction of thorium or any other substance may lead to severe complications, as the following cases will indicate.

E. N., aged 28, fireman, admitted to New York Hospital, Dr. Pool's service, January 26, 1917, complaining of fever, headache, and belching of gas. Previous history: Patient had been in the hospital from January 16th to January 22d, complaining of pain in left loin. X-ray with thorium injection, gravity method, showed a suspicious shadow in the pelvis of the left kidney. For one day after leaving the hospital patient felt fairly well. Since that time he has suffered from fever, malaise, severe headache, numerous attacks of sharp pain in the left flank radiating to the right. Frequent sour eructations. Frequency and dysuria.

Physical examination: Sparsely nourished man, acutely ill. Increased rigidity in upper

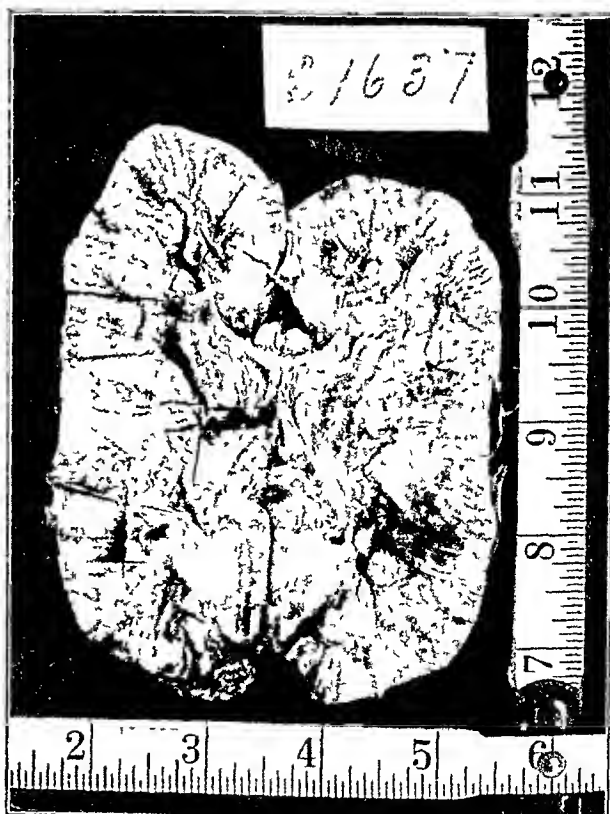


FIG III—MULTIPLE AREAS OF INFECTION IN A PREVIOUSLY DISEASED KIDNEY FOLLOWING PYELOGRAPHY (THORIUM CITRATE SOLUTION BY GRAVITY METHOD)

but does not look acutely ill. No abnormal findings except for a slight amount of tenderness in the lower left quadrant.

Operation performed on October 16th, 1914, by E. L. Keyes, at which time an impacted stone about the size of a navy bean was removed from the left ureter through a Gibson incision, an urethral catheter being passed upward into the kidney pelvis and down into the bladder. Convalescence was marked by some drainage of urine from the wound and ultimately a catheter was placed in the sinus for two days thereby reducing the fever which the patient developed on the 12th day after operation. Ultimately the patient recovered and was discharged as cured on November 11th, 1914.

One of his several readmissions follows.

Max Kreller, age 28, readmitted to the hospital July 21st, 1915.

Patient readmitted to hospital because of stoppage of tube in left ureter. Has a feeling of fullness in left lower abdomen and marked increase in temperature.

July 12, 1915—Attempt to catheterize left ureter failed. Drainage tube reinserted.

July 22, 1915—Slight drainage re-established from tube in left ureter. Greenish purulent discharge.

July 24, 1915—Phenolsulphonephthalein test (intravenously) 3 per cent from right side in 15 minutes. None on left side.

August 1, 1915—Intramuscular phthalein test.

Right side—first hour, 18 per cent, second hour, 28 per cent.

Left side—first hour, 2 per cent, second hour, 3 per cent.

July 28—Under local anesthesia  $\frac{1}{2}$  per cent novocaine Dr. Keyes incised left kidney at its lower pole and introduced a rubber drainage tube, blood was seen to come from the sinus in abdomen after operation.

Cystoscopy—Dr. MacKenzie, August 24, 1915. Catheter passed to the right kidney pelvis and only 5 cm into the left ureter.

August 30, 1915—Tubes introduced into right kidney pelvis with success.

September 6, 1915—Both tubes draining nicely.

This patient and is frequently the ureter follicle of stone in the position and but, nature is by much more. Several inter experience la tfections are errors in explored

tember 14, 1917, suffering from pain in lower abdomen, anuria and vomiting.

**Present History**—Patient was struck in the abdomen by the pole of a wagon twenty-seven hours before admission. Did not lose consciousness, but had a crampy pain in abdomen. Pain has increased in severity, patient has become very weak and has vomited everything immediately upon ingestion. Had extreme thirst which could not be satisfied by drinking huge quantities of water. During this time he has been able to pass only two ounces of urine. On entering the hospital patient was catheterized with very little urine obtained (statement of patient).

**Physical Examination**—Looks very ill, is restless and complains of great pain. Rational. Marked rigidity and tenderness on superficial palpation over entire abdomen. Especially tender below umbilicus. No hollow or solid viscera palpable. There is tympany anteriorly and movable dullness in the flanks.

No. 18 French natural curved catheter passes easily and only a few drops of urine obtained. Upon pressing on the bladder bubbles of air were passed through the end of the catheter, 300 c.c. of boric acid solution injected into the bladder and about 200 c.c. returned.

W B C, 15,200. Polys 88/Lym 2 Lm/10.

**Rectal**—Prostate is enlarged to about twice its normal size. Both lobes are equal in size, shape and consistency. Median groove is well marked. No adhesions present. Pressure up above the prostate gives patient great pain. There is no mass palpable.

**Operation**—Revealed no rupture of bladder, there was, however, some contusion of the wall and slight bleeding, so peritoneum was opened, disclosing a profuse peritonitis and a rent in the sigmoid about an inch in length. This was closed tightly and drawn up into the wound which was closed with three big drains in place. Patient did well for five days, then he began to lose ground and finally died from his peritonitis. The failure of all the fluid to return in this case was undoubtedly due to the lodgement of a blood clot in the eye of the catheter.

Dr. Alfred T. Osgood has reported an interesting case of rupture of the bladder in which a knuckle of intestine protruded into the rent so that water introduced into the bladder would cause the intestine to rise and block the aperture in such a manner that about the same amount of fluid returned that was introduced. He then explored the abdomen and found it free in the peritoneal cavity. Careful dissection above revealed the tear into the bladder one of the most frequent complications in urologic surgery is the uremia which follows removal of vesical calculus. We are thoroughly convinced that the patient having stone

An interesting accident has caused us to adopt the method of taking an X-ray before the introduction of thorium. The case follows.

A F, 15 years old, presented herself at my clinic at the New York Hospital complaining of cramplike pains in the left flank which radiated to the left groin. The pains came on suddenly and were only relieved by morphine. The patient had had several previous attacks. She was sent into the hospital and a pyelogram of the left side made. It showed a deepening of the shadow at three points and 2 X-rays taken 24 hours after the pyelogram showed three small shadows apparently in the pelvis of the kidney. These were considered stones by the radiographer and an operation was performed. Thorough searching of the kidney at operation failed to reveal the calculi and subsequent X-ray did not show them. Then a restudying of the plates led us to believe that the deepening of the shadows of the pyelogram resulted from an end-on view of some calyces and the shadows in the 24 hour plates were undoubtedly due to thorium or some opaque substance spilled on the celluloid table top under which the plate was placed when the X-ray was taken. As a result of this experience we always take an X-ray before, during and after the introduction of thorium into the kidney pelvis.

An interesting case came to operation on Dr Keyes' service a few weeks ago.

J N, age 40, a carpenter, was admitted on August 24, 1917. Chief complaint, pain in right lumbar region with sense of weight, passes gravel in urine. Pain during micturition, only when gravel is passed.

*Previous History*—First attack about eighteen months ago came on suddenly with sharp stabbing pain in right hypochondrium with radiation to back. The onset of pain was coincident with the patient's lifting a 100 pound bag from the ground. Associated with the pain the patient became dizzy and fell over with the severity of the attack. He was treated at Bellevue on the medical service and was told that he suffered from gall stones. During the attack patient noticed gravel in urine and had pain on micturition.

*Present Illness* came on suddenly after much lifting. This attack was accompanied by vomiting and patient entered hospital complaining of pain, gravel in urine, night sweats, slight cough.

*Analysis of Symptoms*—Pain in right lumbar region, at first sharp and now steady gnawing pain which radiates to the front and down the scrotum and right thigh as far as the knee joint.

*General Appearance*—Male well developed and well nourished. Does not seem acutely ill. Moans with the sharpness of the pain. On right side of abdomen there is a large mass which extends from about tip of the 12th rib behind to about midway between the umbilicus and anterior superior spine in front. Is very tender

on deep palpation, movable and elastic in consistency.

*Cystoscopy*—Bladder, Capacity 10-12 ½ Urine cloudy, amber. There are many crystals of calcium phosphate clinging to the bladder wall throughout but are well marked in and around the trigone and base of bladder. No stones were discovered further than those described above. The bladder was very much reddened and the vessels seemed injected. No diverticulum nor actively ulcerative areas found. Trigone very much inflamed and reddened. Ureters normal in size, shape and position. X-ray neg.

There was a considerable variation of opinion among the members of the staff regarding the nature of the tumor. It increased in size very materially just before operation and extended almost to the midline in front and seemed to have a definite edge. About this time patient developed a fever and blood count showed 14,000 white cells, 85 per cent polymorphonuclear leucocytes. The various diagnoses suggested were: Infected gall bladder, tumor of the head of the pancreas, infected hypernephroma and perinephritic abscess.

I opened him in the loin and came down upon a fairly healthy looking kidney but rather large in size and continuous with the mass in front. I started carefully to work the organ free from the rather adherent perinephritic tissue and when a point directly in front of the kidney was reached a huge abscess cavity was opened which had extended forward into the abdomen instead of into the flank in the usual manner. The interesting facts about this case are that the X-ray did not help. Cystoscopy was negative. Fever and rise in number of white cells was late in appearing and the position of the tumor was misleading.

Long continued lodgement of stone in the ureter is usually accompanied by stricture of the ureter below the stone and sometimes above. In case such a condition occurs it is important that the stricture be repaired at the time of operation as well as the removal of the stone. A case in point follows.

Case of M K. Age 27, admitted October 10th, 1914, complaining of severe pain in left lumbar region, intermittent in character and of three days duration.

*Family History*—Unimportant.

*Past History*—Has always been healthy. Does not use alcohol, tobacco or other drugs. Denies venereal infections by name and symptom.

*Present Illness*—Five months before admission patient had an attack of pain in left side. A second attack occurred eight days later. Since that time he has had four other attacks, the last one began three days before admission. An X-ray taken four months ago showed a calculus in the lower end of the ureter.

*Physical Examination*—Well nourished, well developed white man who has considerable pallor

but does not look acutely ill. No abnormal findings except for a slight amount of tenderness in the lower left quadrant.

Operation performed on October 16th, 1914, by E. L. Keyes, at which time an impacted stone about the size of a navy bean was removed from the left ureter through a Gibson incision, an urethral catheter being passed upward into the kidney pelvis and down into the bladder. Convalescence was marked by some drainage of urine from the wound and ultimately a catheter was placed in the sinus for two days thereby reducing the fever which the patient developed on the 12th day after operation. Ultimately the patient recovered and was discharged as cured on November 11th, 1914.

One of his several readmissions follows.

Max Kreller, age 28, readmitted to the hospital July 21st, 1915.

Patient readmitted to hospital because of stoppage of tube in left ureter. Has a feeling of fullness in left lower abdomen and marked increase in temperature.

July 12, 1915.—Attempt to catheterize left ureter failed. Drainage tube reinserted.

July 22, 1915.—Slight drainage re-established from tube in left ureter. Greenish purulent discharge.

July 24, 1915.—Phenolsulphonephthalein test (intravenously) 3 per cent from right side in 15 minutes. None on left side.

August 1, 1915.—Intramuscular phthalein test. Right side—first hour, 18 per cent, second hour, 28 per cent.

Left side—first hour, 2 per cent, second hour, 3 per cent.

July 28.—Under local anesthesia  $\frac{1}{2}$  per cent novocaine Dr. Keyes incised left kidney at its lower pole and introduced a rubber drainage tube, blood was seen to come from the sinus in abdomen after operation.

Cystoscopy.—Dr. MacKenzie, August 24, 1915. Catheter passed to the right kidney pelvis and only 5 cm. into the left ureter.

August 30, 1915.—Tube introduced into right kidney pelvis with difficulty. Drains well.

September 6, 1915.—Discharged. Both tubes draining nicely.

This patient presents a very doleful picture and is frequently in trouble due to stricture of the ureter following a long continued impaction of stone in the ureter. As long as his tubes are in position and drainage is kept open he is fine but nature's attempts to heal are accompanied by much distress and usually another operation. Several interesting cases have arisen in my experience lately which show that bladder affections are not free from complications and that errors in diagnosis are possible in this much explored region.

Report of case follows.

W. J., age 55, admitted to Bellevue, Sep-

tember 14, 1917, suffering from pain in lower abdomen, incontinence and vomiting.

*Present History*—Patient was struck in the abdomen by the pole of a wagon twenty-seven hours before admission. Did not lose consciousness, but had a crampy pain in abdomen. Pain has increased in severity, patient has become very weak and has vomited everything immediately upon ingestion. Had extreme thirst which could not be satisfied by drinking huge quantities of water. During this time he has been able to pass only two ounces of urine. On entering the hospital patient was catheterized with very little urine obtained (statement of patient).

*Physical Examination*—Looks very ill, is restless and complains of great pain. Rational. Marked rigidity and tenderness on superficial palpation over entire abdomen. Especially tender below umbilicus. No hollow or solid viscera palpable. There is tympany anteriorly and movable dullness in the flanks.

No. 18 French natural curved catheter passes easily and only a few drops of urine obtained. Upon pressing on the bladder bubbles of air were passed through the end of the catheter, 300 c.c. of boric acid solution injected into the bladder and about 200 c.c. returned.

W. B. C., 15,200. Polys. 88/Lym. 2/Lm. 10.

*Rectal*—Prostate is enlarged to about twice its normal size. Both lobes are equal in size, shape and consistency. Median groove is well marked. No adhesions present. Pressure up above the prostate gives patient great pain. There is no mass palpable.

*Operation*—Revealed no rupture of bladder, there was, however, some contusion of the wall and slight bleeding, so peritoneum was opened, disclosing a profuse peritonitis and a rent in the sigmoid about an inch in length. This was closed tightly and drawn up into the wound which was closed with three big drains in place. Patient did well for five days, then he began to lose ground and finally died from his peritonitis. The failure of all the fluid to return in this case was undoubtedly due to the lodgement of a blood clot in the eye of the catheter.

Dr. Alfred T. Osgood has reported an interesting case of rupture of the bladder in which a knuckle of intestine protruded into the rent so that water introduced into the bladder would cause the intestine to rise and block the aperture in such a manner that about the same amount of fluid returned that was introduced. He then explored the abdomen and found urine free in the peritoneal cavity. Careful search above revealed the tear into the bladder.

One of the most frequent complications in bladder surgery is the uremia which follows the removal of vesical calculus. We are thoroughly convinced that the patient having stone

in the bladder should be as carefully prepared for his operation as is the prostatic hypertrophy case and if it is one of long standing should be done under local anæsthesia or gas and oxygen

I have not had time to gather statistics, but the cases of vesical calculus that we see at Bellevue Hospital do poorly and we have learned to study them as painstakingly as we do the old gentleman who has had long standing retention of urine

The following case has brought this to our attention particularly

Case of J. G., age 28, admitted September 18th, complaining of pain in left lumbar region without associated symptoms. Pain sharp in character and radiates to left inguinal region anteriorly. Relieved by application of heat. Pain at head of penis, burning in character, increased by exertion, relieved at end of micturition. Blood in urine at end of micturition.

*Physical Examination*—Patient not acutely ill, well nourished young adult. Abdomen, negative, except for tenderness on palpation over hypogastrium. Rectal, prostate slightly enlarged, but both lobes equal in size.

*Cystoscopy*—Bladder had to be washed several times before the examination could be continued and then there was free floating pus and mucous present. Upon examination of the fundus there was found a white nutmeg looking stone about the size of a quarter which was freely movable and contained spots of blood on examination. To the right of the left ureter there was a small, round, smooth-edged hole which allowed the catheter to pass up for a distance of 4 cm., and was probably due to non-complete inflation of the bladder. Did not look like a diverticulum. Many trabeculations present throughout the bladder walls. No ulceration found.

*Trigone*—Reddened and markedly inflamed, bleeding very easily. Small particles of mucous were lodged on the same.

*Ureteral Orifices*—Situated on the inner side of the markedly swollen trigone and were not catheterized. At the mouth of the left ureter there is much pus and mucous. It is red and inflamed. The right is also reddened, but not so deeply as the left.

*Prostate*—No intrusions of any of the lobes noted. X-ray showed renal calculus on left side and vesical calculus.

*Diagnosis*—Vesical calculus and renal calculus.

*Operation*—Suprapubic operation for removal of stone. Following the operation the patient became uræmic on third day, and died ten days after operation.

Formerly the most common complication of prostatic surgery was a resulting kidney failure and often death of the patient from that cause. Some of us have now arrived at the conclusion

that it really does not make much difference whether one does a suprapubic or a perineal operation as long as the patient is properly prepared by drainage, either by a retained catheter or a suprapubic cystotomy. The patient's condition is estimated by investigation of retention in the blood of non-protein nitrogen, the phenolsulphthalein functional test and the amount of urea excreted in a twenty-four hour specimen so that we really have a triple check upon work being done by the kidneys. Unless the patient's heart is actively decompensating we do not regard it as a serious condition.

We never give ether if it can possibly be avoided. Our routine in doing a suprapubic prostatectomy is to incise the skin under 1/5 per cent cocaine and the underlying tissues with 1/10 of 1 per cent until the bladder is reached. Then the patient is given nitrous oxide and oxygen and the bladder incised and the prostate enucleated, the general anæsthetic being removed as soon as that organ is out. The patients rarely object to the sewing up process. In the routine procedure the patient gets about 3 to 5 minutes of general anæsthetic. In the perineal operation gas and oxygen are used throughout.

An interesting complication of a gonorrheal prostatitis came to operation last year.

J. D., aged 28, a hatter, came to me complaining of acute retention. He had had gonorrhea ten years ago and another attack eight years ago which lasted over four months. One year ago he had had an operation for stricture (internal urothrotomy), following an acute retention and his present disturbance began two weeks before consulting me. Urine was cloudy, specific gravity 1016, trace of albumen, no glucose, many pus cells, colonlike bacillæ. Sounds passed to 36F. Rectal examination revealed a prostate about twice the usual size, with a great many nodules which were very hard. Pressure elicited a grating sensation. The prostatic fluid was full of pus, but no gonococci were found. X-ray was taken which showed multiple calculi in the prostate.

His prostate was explored, using the Young perineal method of approach, with the result that 325 stones were removed from the prostate without removing much of the prostatic tissue itself. Patient made an uneventful recovery and is perfectly well today.

The complications occurring in diseases of the urethra comprise a subject deserving more than passing mention, but will not be entered into in this discussion except to mention an interesting case that occurred in my practice some time ago.

P. B., an attorney, came to me in March, 1915, with the following history. Three years before admission he had been stricken

with cramplike pains in the left loin which were so terrific that he was obliged to have morphine to relieve him. The pain radiated into the left groin and the left testicle was tender and drawn up. The pain subsided a few days later after having been concentrated in the left lower quadrant of the abdomen. A short time later the patient was passing his urine, when it suddenly stopped and the patient suffered great pain near the head of the penis and felt a hard lump there. Later he was able to void, but the lump remained until he presented himself to me. A probe passed  $\frac{1}{2}$  inch into the urethra came in contact with a hard mass which grated upon movement of the instrument. Novocain 4 per cent was injected into the meatus and surrounding mucosa and a meatomy performed, the wound later being extended. The mass was withdrawn with difficulty and proved to be a calculus evidently of renal origin.

In conclusion, the warning is emphasized that pyelography even when done by the gravity method, is fraught with the elements of considerable danger and should be undertaken only when absolutely necessary and never be performed upon more than one kidney at a time. When thorium or other opaque liquids are introduced into the kidney, ureter, and pelvis for the purpose of detecting stone it is well to take an X-ray before, during, and twenty-four hours after injection.

Early exploration is advised if fever persists in case of stone in ureter. Nephrotomy rather than nephrectomy is to be recommended in a case of polycystic kidney whether it is infected or not.

One of the commonest complications of ureteral lithiasis is subsequent stricture of the ureter. If there is any tendency toward constriction noted at the time of operation this should be corrected by sewing the longitudinal wound laterally after the method of repair proposed by Hugh Cribot in stricture of the urethra.

The urological surgeon should be prepared to perform any emergency operation in the abdomen. Confusion may exist between tumors of the kidney and other organs in this region. Rupture of the bladder may often be recognized or simulated by injury to another viscus in the pelvis.

The most important part of any prostatic surgery is the preparation of the patient. This consists by drainage either by a suprapubic cystostomy or the indwelling catheter.

Complications occurring in the urethra are usually associated with stricture following gonorrhea. Occasionally stones become lodged in the urethra, usually near the external meatus.

## THE COMMON PROBLEMS IN DIABETES MELLITUS\*

By JOHN R. WILLIAMS, M.D.,  
POCHESTER N. Y.

THE purpose of this paper is to present and discuss briefly the principal problems with which the physician has to contend when he undertakes the care of a case of diabetes mellitus.

There are four important types of cases encountered in practice with which he should be familiar. They are as follows:

1 The mild cases which show inconstantly traces of sugar irrespective of what is eaten. Such cases are rarely ill and feel no inconvenience except the alarm occasioned by the finding of a reducing substance in the urine. They are not true diabetes mellitus.

2 Mild or moderately severe cases of diabetes, with slight symptoms, suffering little or no physical inconvenience and who live for years. Toward the end, physical evidence of breakdown becomes noticeable and they usually succumb either to the diabetes or some intercurrent malady.

3 The rapidly fatal malignant type which ends quickly in coma.

4 The diabetic who is hard to get sugar free, usually because he has an overlooked or unrelieved chronic infection, peripheral circulatory obstruction with resulting gangrene, or a disturbance in fat or protein metabolism.

The physician's relation to the case is or should be quite different to that now obtaining in ordinary illness. His function toward the diabetic is to teach, inspire and encourage, to frequently examine and conserve by wise advice the failing physical and metabolic capacity of the diabetic.

To consider the foregoing points more in detail. Every little while one sees an individual who by accident usually at an insurance examination discovers that he has sugar or some other reducing substance in the urine. It is of the highest importance to determine the nature and severity of the phenomena. Sugar in the urine can be differentiated from other reducing substances by the fermentation test and by examination with the polariscope. The amount of sugar present is of great significance, especially when considered in connection with the diet. Typical cases will make clear the points in question.

Case 128. Female, age 48. For several years the patient has shown daily a small amount of sugar in the urine, usually only a fraction of a per cent. Feels well. Condition is independent of diet. Blood sugar 0.08 per cent, which is

\*Read at the Annual Meeting of the Sixth District Branch of the Medical Society of the State of New York, at Watkins, October 9, 1917.

†J. R. Williams and M. Drelich. A Fatal Case of Diabetes Associated with Large Cell Hyperplasia. *Amer. Jour. Med. Sci.* CLIII, 65.

slightly less than normal. This patient probably has a lowered permeability of the kidney to sugar and has not a disturbance in carbohydrate metabolism which characterizes true diabetes. Another case of the same character was Case 1716, male, physician, age 49 years. On general diet, he showed 1 per cent sugar in urine, blood sugar 0.08 per cent. Urine negative after sugar test meal. An even more interesting case occurred in a boy 6 years old, Case 1936. This youngster constantly showed traces of sugar in his urine and was treated for diabetes for some time before his true condition was realized. His blood sugar ranged from 0.03 per cent to 0.09 per cent and rarely was over 0.08 per cent, irrespective of his diet. One can easily do such a case harm by unnecessary dietary restriction, it is therefore urged that before treatment is instituted in any case of suspected diabetes that a thorough clinical examination be made to determine the nature and cause of the glycosuria.

The mild or moderately severe diabetic is one of the most difficult types to handle. The patient suffers no pain or bodily disfigurement. He experiences very little inconvenience and very unwillingly consents to treatment. The treatment of such a case is largely educative, in which the physician is, or should be, the educator. The patient should be taught that his body has sustained an injury or undergone a change wherein it has partly lost the power to utilize food, that if this impaired function continues to be overtaxed by excessive indulgence in food, the failure in function will continue, so that sooner or later it will become so severe as to induce exhaustion and death. It is the physician's business to measure or to have measured the food or metabolic limitations of the patient, to see that the patient understands those limitations and knows when he violates them. Such a patient needs continual encouragement and inspiration and much instruction. It is a great deal easier to be brave, comply with the physiological and moral law when the stomach is full than when it is craving for food. There are few diabetics in the milder stages of the disease who cannot be so adjusted as to have plenty of food, all that is required, as a rule, is to alter the proportions and slightly diminish the quantities. The time, therefore, to most help the diabetic is when his case is still mild, when he can readily ameliorate his condition and arrest the functional change by slightly altering his diet. It is small comfort to many people to rescue them from death if to live they must practically starve and be forever physically inefficient. It should be urged, therefore, that physicians give more thought to the mild diabetic and recognize their great responsibility in the matter. Sooner or later patients will recognize this responsibility of their medical advisers, and dereliction in duty will meet with its just criticism. A few weeks ago, an educated and talented young woman, ill with diabetes, entered our hospital. In two years

her tolerance had dropped so that she could utilize practically no carbohydrate food and not more than 700 calories of fat and protein, which is a pretty slim diet. To help while away the time, she was permitted to assist in compiling the records in the laboratory. After she had had a chance to observe the necessary steps which are required to properly form a conclusion and outline a treatment for diabetes, she one day made the startling statement that she would like to go back to her city and shoot the doctor who had complacently misled her by making no attempt to investigate or ascertain her condition and who allowed her to drift to inevitable death.

The rapidly fatal type of diabetes is essentially a problem for an institution equipped for metabolic study. Such a patient, if he is to be given any chance for life, must at the earliest possible moment receive the most expert study and treatment. There is no conventional plan for the handling of such cases. It may be wise or unwise to feed or to give alkali at a given time. The difficulties to be met and solved are innumerable and time will not permit of their discussion. When a general practitioner untrained in diabetic work encounters such a case, by all odds the safest thing to do until expert assistance can be had, is to give the patient plenty of fluid to drink in the form of water, clear tea, coffee, and broth, and to feed him on a fat-free diet of small amounts of green vegetables and lean meat. Soda and whiskey are of questionable value.

A very common and difficult diabetic problem is that of the patient who is able to be about and who is hard to get or keep sugar free. Many of these patients have a chronic infection. One frequently encounters such cases in patients with syphilis, chronic middle ear disease, chronic teeth and tonsillar infection, myocarditis, gallbladder disease, appendicitis, furunculosis, and the simple cold infections. Infection tremendously lowers the tolerance of a patient. It should be always eliminated when it can be done with safety, whether by operation or otherwise.

Among patients over fifty the tendency to vascular disease in the lower limbs is very great. It is easy for a blood vessel to become partly occluded, trophic disturbances easily follow. Physicians should routinely examine the feet of all diabetics over 50. Long before sores or gangrene results, the feet will present evidences of congestion and stasis. Symptoms of tingling, burning, and numbness are suggestive. Prompt, vigorous, and persistent treatment will prevent many a patient from developing gangrene. Interference with the circulation in the lower limbs often serves to make it difficult to get a patient sugar free. It is quite generally impossible to accomplish this when obstruction once occurs. One is then between Scylla and Charybdis, whether or not to remove the offending limb. Failure to operate inevitably means death, if gangrene occurs. Cases presenting marked evi-

dences of congestion and stasis are occasionally seen to improve and no gangrene result. This has been hoped for in other cases, but instead gangrene had supervened to be followed by death. The safest time to operate on the gangrenous limb is before it becomes gangrenous, that is, if one has the wisdom and foresight to determine that a given case of vascular disturbance is or is not about to become necrotic.

Rarely one sees cases of diabetes who cannot tolerate carbohydrate food while they are taking a moderate amount of protein. A much more common type is the patient who cannot tolerate fat and who has an excess of cholesterol in his blood. In our clinic we have seen forty-six such cases during the past three years. Since cholesterol is now receiving considerable attention from medical scientists, it may be of interest to know a little about it. It is a complicated hydrocarbon containing an alcohol group. In pure state it forms colorless transparent platelike crystals which are greasy to the touch. It is found in considerable amount in brain substance, lymph, gallstones, pus, old exudates, and is often found in large amounts in those diseases associated with grave malnutrition, as pellagra, diabetes, and sometimes nephritis. It belongs to a group of similar chemical compounds known as lipoids, which play a very important part in the body. Thus it is one of the constituents of the outer layer of red blood cells, and probably of all body cells. It inhibits hemolytic action and thus is one of the protective forces of the body. It likewise plays an important part in preventing infection and thus is a vital factor in immunity. Cholesterol is not made in the body, but enters in the food. It is found in the yolk of egg, in some other animal foods and in certain plants. Patients who have an excess of cholesterol in the blood are often difficult to get sugar free, but when fed on a diet low in cholesterol and fat they may make marked improvement. We have had severe cases of cholesterinemia recover under proper dietary regulation, and with this improvement there has been a marked amelioration in the diabetic phenomena. A few days ago there came under observation a young male severe diabetic on whose arms and chests were many little bright yellow discrete papules which did not itch, nor were they inflamed. The blood contained a large amount of cholesterol. This eruption is one of the peculiar manifestations of cholesterinemia.\*

Patients with cholesterinemia usually exhibit a peculiar lemon-yellow tint in the skin about the ala of the nose and on the inside of the palms of the hands. Sometimes this is so pronounced as to be mistaken for jaundice. One should always

be on the lookout for this interesting symptom, complex in difficult diabetic cases.

One should not regard a diabetic as necessarily normal because the urine is sugar free. The proportion of sugar in the blood of the normal individual rarely exceeds 0.10 per cent. Before sugar appears in the urine, however, it usually must increase to between 0.17 per cent and 0.20 per cent. A patient who goes about with a high blood sugar is overtaxing his body as surely as if sugar appears in the urine. Benefit from treatment comes only when a patient is put in normal condition with reference to his metabolism, that is to say, is fed so that his blood sugar remains normal. So far as is known, medicines and ferments have no value in the treatment of diabetes.

To summarize the thoughts expressed in this paper, the physician should begin the treatment of a case of diabetes by a careful clinical study of the patient. One should be sure of the diagnosis. Mild cases should be made to realize that with but little deprivation they may live normal lives, that food excesses mean a downward course which sooner or later spells disaster. The physician's relation to such a case is that of teacher and friend. He must constantly observe, encourage, and inspire the patient.

Patients who do not readily yield to the now well-known methods of treatment by fasting and low feeding will usually be found to be harboring a chronic infection, or may have a vascular disturbance in the lower limbs, or may have an intolerance for either fat or protein. Fat intolerance and cholesterinemia occur sufficiently often to suggest the desirability of feeding fat to any diabetic with caution and the necessity of careful chemical blood examinations in these cases which do yield readily to treatment.

#### A STUDY OF THE URINE IN DIABETES MELLITUS WITH SPECIAL REFERENCE TO THE RELATION OF THE URINARY ACETONE BODIES TO THE AMMONIA EXCRETION \*

By JOHN H. RICHARDS, M.D.,  
NEW YORK CITY

THROUGHOUT the literature there are few reports referring to the relation of diabetic urinary acetone bodies to the ammonia excretion in Diabetes Mellitus. Von Voit\* says that the diabetic excretes more nitrogen than does a healthy man, on the same diet. Von Noorden states "The katabolism of protein is greater than in health, because a normal man gives his protein by burning up his carbohydrates. The conditions under which the diabetic lives may be imitated to some extent in health by decreasing the carbohydrate by the amount that

\*Williams and Dresbach recently reported a most interesting case of diabetes and cholesterinemia. The cholesterol in this case was literally picked in the cells of all the tissue which were examined at post mortem. A proliferation of endothelium resulted which produced a condition simulating splenic disease and which deceived several well-known pathologists.

From the Department of Medicine and Laboratory of Clinical Pathology of Cornell University Medical College under direction of T. W. Hastings.

a diabetic passes in his urine"<sup>2</sup> Working in this way Lusk<sup>3</sup> demonstrated that, when carbohydrate is diminished in the diet of a healthy man, his katabolism is no less than that of a diabetic Miura and Kayser<sup>4</sup> agree with him Von Noorden<sup>5</sup> contends that, when it is greater, the problem is one of underfeeding

Von Noorden<sup>6</sup> sums up the literature on the relation of the acetone bodies to the ammonia as follows "The human tissues are able to protect themselves up to a certain point against an increased production of acids and their toxic effects, by neutralizing them with ammonia. Large quantities of the latter become combined with acids and (are) excreted in the urine" Magnus-Levy<sup>7</sup> regards the ammonia as an index of the acidosis, and showed from reported cases that the quantity of the ammonia in the urine is an approximate measure of the B-oxybutyric acid. He says that every gram of ammonia in excess of that due to the food corresponds to about 6 grams of B-oxybutyric acid. Continuing in this line Von Noorden says that when there is no acidosis the urea nitrogen usually maintains its normal 80 per cent of the total nitrogen, and the ammonia nitrogen is 5-6 per cent. He says that in the absence of acidosis the relation between the total nitrogen and the ammonia nitrogen is the same in diabetes as in health, and is remarkably constant, and also it is possible that pushing the protein may increase the ammonia, relatively as well as absolutely, and that with increasing acidosis, provided fixed alkali be not given, the absolute and relative quantity of ammonia is increased in such a way that it may be used as an index of the acidosis.

Concerning changes in the intermediate metabolism as evidenced by urinary nitrogen partition estimations in diabetes mellitus without acidosis, there has been little written. Von Noorden<sup>8</sup> says "The study of amino-acid excretion is full of promise as a means of demonstrating those qualitative changes in protein katabolism, which probably play a greater part in diabetes than we have been able to measure hitherto." Our records show that in many cases of diabetes there is not only a disturbance in the amino-acid metabolism, but also a disturbance in the metabolism of nitrogen that is altogether independent of the urinary acetone bodies and of the amount of the sugar in the urine. In a recent Harvey Lecture Van Slyke<sup>10</sup> reported experiments showing an excess of amino-acid nitrogen in the efferent circulation of dogs that had been poisoned with phosphorus until there was considerable destruction of liver substance. In dogs less poisoned there was not found an excess of amino acids. He says, "It is evident, however, that, in dogs at least, the liver injury must be most severe in order to affect the amino acid content of the blood or urine." He further states that "the urine of certain patients in Dr. Allen's diabetes clinic do show amino-acid figures distinctly higher than normal." It is a fact, however, that

desamidation is the result of vital activity, and there can be a disturbance of vital activity without demonstrable morphological changes. The physiology of digestion is replete with examples. When there is much tissue destruction there is a disturbance in the function of that tissue, but the converse is not necessarily true. Even in pancreatic diabetes there is no extensive tissue destruction that will account for the failure in carbohydrate metabolism. To produce the disease experimentally it is necessary to destroy much of the pancreas, but in spontaneous diabetes mellitus it is rare that a diagnosis can be made from histological findings. In these cases of diabetes in which is found a deficient desamidation there is a failure in some vital activity. Such cases in our series have had a severe type of the disease, and generally offer a worse prognosis than cases in which a deficient desamidation is not found.

The methods employed in our estimation were as follows:

*Total Nitrogen*—Kjeldahl (Argutinsky)

*Urea*—Moerner-Sjoquist, Folin, controlled by DuPrey hypobromite method

*Ammonia*—Folin

*Urea*—Walker-Hall

*Kreatinin*—Folin (colorimeter)

*Acetone Bodies*—Shaffer

In a few estimations Murlin's amino-acid method has been used. In such cases the amino-acid has been calculated as rest.

Rest nitrogen includes the amino-acid nitrogen.

The total number of cases studied is fourteen.

The total number of urine examinations is ninety-one.

Care has to be taken to preserve the urine by having each voiding shaken with chloroform as soon as voided. No decomposed urine have been accepted.

During the 36 hours preceding the taking of the specimens no carbonate or bicarbonate of soda was given.

The diet in this series of cases was the Von Noorden test diet<sup>12</sup> or, in a few cases a mixed diet such as is known as "regular diet" in Bellevue Hospital.

The following table will, in a condensed form, show our results.

Number of Observations on Cases	Total Acetone Bodies in 1 term of B-oxy Acid Grams 24 Hours	Total Nitrogen Grams 24 Hours	Total Ammonia Nitrogen Grams 24 Hours	Total Rest Nitrogen Grams 24 Hours
28	05-49	12-22	12-40	02-09
4	03-21	91-142	02-09	08-20
14	06-37	112-241	12-43	092-16
8	none	82-144	10-18	024-06
2	none	92-140	09-17	10-16
15	none	101-142	028-07	10-14
8	06-20	92-126	03-068	02-07
12	none	87-141	02-07	03-07

From an analysis of the above table it is found that we have

28 observations showing urinary acetone bodies with high ammonia and normal rest N

4 observations showing urinary acetone bodies with normal ammonia and high rest N

14 observations showing urinary acetone bodies with high ammonia and high rest N

8 observations showing no urinary acetone bodies with high ammonia and normal rest N

2 observations showing no urinary acetone bodies with high ammonia and high rest N

15 observations showing no urinary acetone bodies with normal ammonia and high rest N

8 observations showing urinary acetone bodies with normal ammonia and normal rest N

12 observations showing no urinary acetone bodies with normal ammonia and normal rest N

On account of the normal ammonia sometimes found in the presence of urinary acetone bodies, and on account of the high ammonia sometimes found in the absence of urinary acetone bodies it appears in this series of cases that

1 The ammonia tends to increase as the urinary acetone bodies but it not wholly dependent on such increase, though the ammonia may, in such cases, arrive at greater heights

2 The ammonia and rest nitrogen are often high in the absence of urinary acetone bodies

In an attempt to determine whether the amount of urinary sugar excretion in any way influences the urinary nitrogenous excretion, we have classified our cases with this in view as follows

*5 grams or less of sugar excreted in 24 hours*

Normal ammonia with normal rest	6 observations
High ammonia with normal rest	14
High ammonia with high rest	3
Normal ammonia with high rest	4

*5-15 grams of sugar excreted in 24 hours*

Normal ammonia with normal rest	4
High ammonia with normal rest	13
High ammonia with high rest	1
Normal ammonia with high rest	3

*15-30 grams of sugar excreted in 24 hours*

Normal ammonia with normal rest	3
High ammonia with normal rest	3
High ammonia with high rest	1
Normal ammonia with high rest	0

*30-60 grams of sugar excreted in 24 hours*

Normal ammonia with normal rest	4
High ammonia with normal rest	2
High ammonia with high rest	3
Normal ammonia with high rest	2

*60-100 grams of sugar excreted in 24 hours*

Normal ammonia with normal rest	2
High ammonia with normal rest	2
High ammonia with high rest	1
Normal ammonia with high rest	1

*100 or more grams of sugar excreted in 24 hours*

Normal ammonia with normal rest	1
High ammonia with normal rest	2
High ammonia with high rest	7
Normal ammonia with high rest	0

From the foregoing it is seen that there is no relation between the ammonia nitrogen and rest nitrogen and the amount of urinary sugar excreted. This has been found important in the treatment of diabetes, for those cases, in which is found a disturbed nitrogen partition, are much more difficult to handle than those with a normal urinary nitrogen partition. They much more readily develop acidosis, and generally offer a worse prognosis. In many cases it is possible to correct the nitrogen disturbance by limiting the nitrogen intake. Example: When Mr B first came under treatment he was excreting on a Von Noorden test diet 19 grams of nitrogen daily. Of this there was 13 grams ammonia nitrogen and 26 grams rest nitrogen. On reduction of the protein intake together with rest in bed the total nitrogen dropped to 11.2 grams of which 8 per cent was ammonia nitrogen and 103 per cent rest nitrogen. On exercise the total nitrogen remained the same but the ammonia nitrogen and rest nitrogen increased while his sugar tolerance remained about the same. The nitrogen partition caused him to be classed as a severe case in spite of the fact that his urine could be made both acetone and sugar free for short intervals. After 4 years' observation with less than 1 gram of acetone and diuretic and less than 2 grams of B-oxylbutyric acid in the 24 hour urine he developed coma and died. At this time there was 11 grams total nitrogen of which 14 per cent was ammonia nitrogen and 15 per cent rest nitrogen.

### CONCLUSIONS

1 In many cases of this series the ammonia is not an index of the urinary acetone bodies

2 There may be an increased excretion of ammonia in the absence of urinary acetone bodies

3 There may be a normal excretion of ammonia with urinary acetone bodies

4 The quantity of sugar excretion has no relation to the ratio of the nitrogen content of urine

5 In many cases of diabetes there is a disturbance of the ratio of the nitrogen content of the urine which may be corrected by regulating the nitrogen intake but no correction of the urinary sugar nor of the urinary acetone bodies will correct this nitrogen disturbance

## REFERENCES

- 1 Von Voit *Physiol des Stoffwech.*, p 226, 1881
- 2 Von Noorden *Metabolism*, Vol III, p 569, 1907
- 3 Lusk *Zeitschr f Biol.*, XXVII, 459, 1891
- 4 Miura and Kayser *Von Noorden's Beitr zur Lehre vom Stoffwech.*, I
- 5 Von Noorden *Metabolism*, Vol III, p 598, 1907
- 6 Von Noorden *Metabolism*, Vol III, p 598, 1907
- 7 Magnus-Levy *Exper Arch* XLII, 149
- 8 Von Noorden *Metabolism*, Vol III, p 603
- 9 Von Noorden *Metabolism*, Vol III, p 607
- 10 Van Slyke *Harvey Lecture*, 1915-16
- 11 Ewing & Wolf *Amer J Obstet*, Vol IV, No 13, 1907
- 12 Von Noorden, *Metabolism and Nutrition*, Part VII, p 175

## ABORTION AND ITS TREATMENT.\*

By ABRAHAM J RONGY, M.D.,

NEW YORK CITY

IT is not my purpose in this short paper to present to you a large statistical study of the number of cases treated. The literature is full of such reports. A review of the study of this subject from any single clinic embracing the largest series of cases, leaves one in confusion as to the actual etiology of this very important condition.

It is not my desire to present to you a particular form of treatment, for I feel that abortion, as well as many other medical and surgical disorders, have been subjected to various forms of treatment which are not in keeping with the true principles governing the physiology or biology of the human economy.

Heretofore we concentrated all our efforts to the study of terminal conditions in the human body after a great deal of vitiation had already taken place. We directed our attention to disordered or disturbed processes. We failed to realize that these various manifestations are the results of altered physiological processes.

Modern medicine is essentially built upon pathology and bacteriology and our conception of disease very naturally developed along these lines. May I ask is not the science of pathology, terminal, in its relation to health?

Such as has been and is the basis for the study of medicine since cellular pathology was first promulgated. Along such lines are the present-day medical students trained. We have, therefore, built a top-heavy structure upon a very uncertain foundation and it can not possibly stand the test of time.

Among the common constitutional predisposing etiological factors that are very frequently mentioned as causes for abortion are increased sensitiveness to nerve irritation—temperament, so called—and interference with nutrition—as anemia. Both conditions when they do exist are secondary in nature and by themselves are of

no importance as etiological factors. They are terminal in nature and are the result of some serious disturbances of the normal functions. One may go on and analyze nearly all the causes which are supposed to produce abortion and hardly any of them meet the requirements of a reasonable and diligent investigation. It is this manner of approaching bodily disturbances which has brought about the present superficial methods pursued in the study of disease.

A review of the various methods advocated for the treatment of this condition reveals the fact that at no time is a study made of the individual patient. No consideration is given to a particular form of treatment from the standpoint of the possible underlying causative factor. No attention is paid to local developmental changes which are so typical of certain groups of cases. All are placed in the same category for the purpose of advocating a certain form of treatment. Here again very little discernment has been shown. Innumerable patients have been practically treated with no deviation from the time-honored maxim, "That the average case of abortion spells curettage." Here and there we find some slight difference of opinion as to some minor procedure, no one of which would materially change the ultimate outcome of the case.

It is surprising to find how difficult it is for the average hospital worker to rid himself of established methods and procedures which are a part of the hospital routine. This point is very well illustrated by the fact that nearly 95 per cent of all cases of abortion are still subjected to some intra-uterine manipulations usually under a general anesthetic.

Does it seem reasonable to subject a patient to the strain of an operation and to the depressing effects of general anesthesia because of the possible retention of some small pieces of the secundary or decidua tissue? Nevertheless this is the accepted routine form of treatment in all cases of early abortion in one of the largest lying-in clinics in this country.

I always viewed abortion as a constitutional disturbance. The product of conception ceases to grow because of some derangement of those forces which are concerned in the maintenance of proper body function.

A critical study of a large group of cases, particularly of the primiparous type, will in most instances disclose a definite etiological factor which causes the abortion.

It may be necessary to trace its origin to childhood or infancy. Very often the primary cause can not be ascertained. Not because it did not exist, but because the patient is unable to relate it to us.

We are all aware of the fact that individuals can be classified into certain groups according to their biological development. We know that

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Utica April 24, 1917.

some of the characteristics, both physical and mental, peculiar to some persons essentially depend upon the functioning power of some certain glands in the body

We recognize the Pituitary type, the Thyroid type, or the Adrenal type, etc. These types are so different and at this time so well known, that a description of them is hardly necessary. This is no mere theoretical speculation, for clinically and empirically it has been time and again demonstrated.

For the past three years I made a careful study of this subject from the standpoint of internal secretion. I need not state that long before the dawn of internal secretion it was an accepted fact that the pituitary body and thyroid gland undergo changes during pregnancy. We did not at that time have a proper conception of its function. Recent investigation disclosed many of their physiological action and we therefore have a better understanding of the nature of the changes which take place during pregnancy.

Unless the ductless glands functionate properly, reproduction will not progress normally. A disturbed pituitary secretion will either cause a cessation of the growth of the product of conception and its early expulsion from the uterus or it may bring about an overdevelopment of the child which so very frequently complicates labor.

I am sure that the time is rapidly approaching when our ability to treat properly the pregnant state will depend upon our appreciation of the early changes which take place in the domain of the internal secretions.

Only an early discernment of the possible disturbances which take place in the body because of an altered relationship of the functions of these glands will enable us to rectify the various hyper or hypo activities of certain typically grouped and classically displayed phenomena in the human economy.

It will be possible that by the administration of one or more of the artificially prepared organic substances to correct and regulate these body functions, and in that way only will normal physiological activities be re-established.

My experience with this class of patients has been that they can be very readily assigned to a particular group, characteristic of the disturbance of the function of one or more of these ductless glands. However, the difficulty of the treatment of these conditions is due to our absolute ignorance of the proper dosage to be administered.

It appears that the effect produced by these drugs varies with each individual. It varies with the season of the year. This is true of all the standard preparations. Very often a very minute dose will affect one patient much more than a large dose will affect another. Again, a

very small dose will accomplish greater results in the same patient at one time than it does at another time.

The therapeutic effects of the various glandular extracts is uncertain because we do not know the quantity necessary in order to reach a point of normal saturation. We do not know how much of that particular secretion the individual lacks at a given period of time. This problem for the present must be solved by the physician to the best of his ability. But it is prudent to commence treatment with small doses, and the effects very carefully observed.

The prevention and treatment of abortion does not commence from the time conception has taken place. We must prepare the young girl for motherhood. It is the duty of the physician to see to it that the growth of the child progresses normally. Careful observation will disclose any alteration of the body functions. Very often it can be corrected.

I am certain that the bony development of the young growing child can be influenced and in that way the formation of the flat pelvis in many a woman may be prevented. We must realize that a disturbed function can be more readily corrected when proper treatment is instituted early.

During pregnancy a great deal can be accomplished to prevent abortion. The clinical phenomena pointing to some form of bodily derangement appears long before the ovum ceases to grow. In the majority of cases it is usually the abnormal activities of the pituitary gland. Very often the administration of one of the glandular substances will tend to bring about a normal state and the pregnancy will progress normally.

During the past six years, six hundred cases of simple, uncomplicated, incomplete abortions were admitted to the gynecological service of Lebanon Hospital. The plan of treatment usually followed in these cases was very simple. Curettage was only resorted to when the bleeding was excessive. This was almost always accomplished by a placental forceps or dull curette. A sharp curette is never used. A hot normal salt intra-uterine irrigation completed the operation. Packing of the uterus with gauze is but seldom resorted to. General anesthesia was not administered unless absolutely necessary. The average stay of the patients in the hospital was eight and one-quarter days.

The largest number had a rise in temperature during the first three days in the hospital. It usually subsided on the fourth or fifth day. No patient was discharged from the hospital unless the temperature was normal for at least two days.

During the past three years many cases of bleeding were controlled by the use of Pituitrin.

I believe many a patient was spared the ordeal of a curettage by the judicious use of this drug

In cases in which the product of conception is separated but still retained in the uterus and is not expelled, we always administer Pituitrin preliminary to the removal of the same. The body of the uterus contracts and becomes firm. The contraction of the uterine wall will complete the separation of the retained material, and it will also push it down into the lower portion of the uterine cavity. The muscular contraction will shut the mouths of the blood vessels and the danger of hemorrhage is greatly minimized. Pituitrin by causing contraction of the uterine walls, will in many instances obviate the danger of perforation of the uterus. Cases which show signs of an inflammatory reaction in and about the uterus are rigidly left alone. Every possible manipulation is eliminated. We always felt that in such patients we are likely to convert a local infection into a general systemic infection by disturbing the protective membrane which has already formed within the uterine cavity. Instrumentation in such cases may create a new wound area which may act as a point of entrance for the bacteria into the general circulation. Pituitrin  $\frac{1}{2}$  c c every four hours hypodermically is administered for about two or three days subsequent to any intra uterine manipulation.

This briefly summarizes the management of cases of uncomplicated abortion. We feel that the general routine carried out by the largest per cent of the family physicians, as well as some of the specialists, in the treatment of this condition is entirely unscientific. It very often produces complications which invalidates the patient temporarily if not permanently. It is a well-known fact that every patient in private practice who suffers from an incomplete abortion is subjected to some form of curette. The teaching of twenty years ago is still clinging to the general profession. The subject is given too little attention by teachers as well as writers on this very important question. It is usually considered a minor procedure and it is therefore treated as such. If the true principles governing the pathology of this condition were properly understood, the many accidents and complications which very often take place in the course of treatment in the ordinary case of retained products of conception would be obviated. It is appalling to see the many pelvic complications which result from the injudicious treatment of the ordinary case of incomplete abortion. Our hospitals are crowded with patients who suffer from all varieties of pelvic infections as a result of unnecessary intra uterine manipulations.

The subject of abortion has occupied the attention of the medical profession since the days when human events began to be first recorded. Reproduction of the species is of vital import-

ance to the race. The conservation of every healthy human being is of great value to the state and society.

Has modern medicine helped to diminish this accident? Is it not a fact that abortion is on the increase among the civilized peoples? It is almost inconceivable to believe that two out of every five pregnancies terminated before the child is fully viable.

When one reviews the literature on the subject for the past twenty-five years, he quickly discovers how superficially the entire question has been dealt with. Study the ten most important papers written during the past ten years and you will find that they do not record one original thought, one new idea as to why an apparently healthy young woman will fail to carry a pregnancy to a period of full viability of the child. True, many local and constitutional causes are cited as reasons, but analyze these causes and how incomplete they are found to be. Let me cite the most common cause mentioned, that of uterine displacement. Does it seem logical to think that a simple displacement of the uterus, whether anteriorly, laterally or posteriorly, will act as a cause for the interruption of pregnancy? A freely movable uterus once it became impregnated will grow and will place itself in the direction of least resistance. What matters it how the uterus is placed in the pelvic cavity in the primiparous woman if pregnancy ensues? Does not pregnancy very soon correct the displacement and does not abortion in these women usually occur some time after the uterus assumed the so-called normal position, why then should abortion occur?

How can we explain the fact that nearly 30 per cent of women abort before the child is born? Why should a woman apparently in good health, married but a short time to an apparently healthy man, abort her first pregnancy? Examination of these patients usually discloses nothing abnormal locally. No trace of inflammatory process can be found in and about the pelvis, the genital organs are developed normally. With all that there must be a reason why so many of these women do abort.

I fully realize that there are many other causes for abortion which I did not touch upon. There are many constitutional diseases either in the male or the female which have a direct bearing on the question. I feel, however, that many of these conditions are only secondary in nature. If this short paper will stimulate others to further investigate this most interesting field of newer physiology, and therapeutics, a great deal of good will be accomplished. I am convinced that should the medical profession become better acquainted with the mysteries of the internal secretions that failure will be replaced by success in the treatment of many of the deranged bodily functions.

## A SIDE LIGHT ON HEALTH INSURANCE

By HENRY LYLE WINTER, M.D.

Chairman, Committee on Medical Economics, Medical Society of the State of New York.

Investigation of the various conditions which bear in any way upon Social Insurance develop many interesting side lights. The most important of these appeared while studying the conditions of medical practice. It develops the very pertinent query, "Where are the doctors to come from who will accept employment under compulsory health insurance legislation?"

Before the war called a large number of physicians to the colors there were only about 75 per cent of the adequate number of physicians, outside of the large cities, in the State of New York. Federal service has decreased this number for an uncertain period. In the large cities this shortage of physicians did not obtain, but the percentage of inefficient men was greater so that it might be reasonable to estimate that the large cities contained approximately the same proportion of competent physicians.

For the past ten years the number of physicians registering annually in the United States has progressively decreased. In 1906, 7,865 physicians were registered in those states which required registration for admission to practice, while only 5,432 were registered in 1917. During this period the population of the United States increased about 20 per cent.

There is therefore, no indication that the shortage of physicians is likely to be overcome.

A survey of two up state counties showed that only 17 men out of 237 who were in active general practice were not overworked. These 17 men were incompetent or for some other reason were unable to give satisfactory service. None of the competent men would consider accepting employment under health insurance legislation and all of them would welcome release from part of their work. The seventeen would possibly be willing to accept work under any conditions.

These conditions probably do not exist throughout the United States but if we consider that 635 men out of the whole number (5,432) who registered last year registered in New York State, the proportion is reasonably well maintained.

Impasse. Any health insurance legislation must fail for lack of physicians to operate it. This is the negative side of the situation.

There is a reverse, or positive, side. The medical profession more than any other group realizes that certain conditions exist to which remedial measures must be applied, both for the good of the public health and the establishment of desirable social conditions. If the remedy is health insurance it is a totally different kind of health insurance than has so far been offered.

Factors can be best met by the medical profession. It is folly for economists to attempt to formulate acts to meet conditions with which they have the merest surface acquaintance. It is just as foolish for national or state medical societies to attempt to cooperate with groups of economists or labor leaders accepting as a foundation for their edifice the theories of those partially informed groups. Social insurance is too far reaching in its influences and possibilities for harm to be applied to a great state for the purpose of proving or disproving the theories of a group of men who merely expect that they can apply European methods to American conditions. The co-operation will have to be reversed. If conditions are to be adequately met it will have to be by plans founded upon knowledge possessed by the medical profession, and co-operated in by economists and labor leaders.

## Correspondence

April 8 1918

DR. JOHN COWELL MAC EVITT

Editor NEW YORK STATE JOURNAL OF MEDICINE

I wish to call to the attention of the profession at large the urgent need of additional medical officers. As the war progresses the need for additional officers becomes each day more and more apparent. Although the medical profession of the country has responded as has no other profession future response must be greater and greater. The Department has almost reached the limit of medical officers available for assignment.

I am therefore appealing to you to bring to the attention of the profession at large the necessity for additional volunteers. So far the United States has been involved only in the preparatory phase of this war. We are now about to enter upon the active or the fighting phase a phase which will make enormous demands upon the resources of the country. The conservation of these resources especially that of manpower depends entirely upon an adequate medical service. The papers publish a statement that by the end of the year a million and a half men will be in France. Fifteen thousand medical officers will be required for that army alone. There are today on active duty 15,174 officers of the Medical Reserve Corps.

Within the next two or three months the second draft will be made to be followed by other drafts each of which will require its proportionate number of medical officers. There are at this time on the available list of the Reserve Corps an insufficient number of officers to meet the demands of this draft.

I cannot emphasize too strongly the supreme demand for medical officers. Will you give the Department your assistance in obtaining these officers? It is not now a question of a few hundred medical men volunteering for service but it is a question of the mobilization of the profession that in the large centers of population and at other convenient points as well as at all Army camps and encampments. Boards of officers have been convened for the purpose of examining candidates for commission in the Medical Reserve Corps of the Army. An applicant for the reserve should apply to the board nearest his home.

The requirements for commission in the Medical Reserve Corps are that the applicant be a male citizen of the United States a graduate of reputable school of medicine authorized to confer the degree of M.D. between the ages of 22 and 55 years of age and professionally morally and physically qualified for service.

With deep appreciation of any service you may be able to render the Department I am

W. C. GORGAS

## The Albany Meeting

PREPARED BY

FREDERIC C CURTIS, M.D.,

President of the Medical Society of the State of New York in 1907 and for seventeen years its Secretary

Once more the State Medical Society is coming back to Albany. After these years of faring afar this foregathering at the old fireside is a homecoming. The Society was born in Albany—it spent its early life, its middle years, in this maternal fold, it passed on to its centennial, with Albany its home and annual gathering place. It had a good deal of its prenatal inception here, for the law which brought it into existence, in 1806, and directed that it meet and organize at the Capitol, was worked out in good part by the men of Albany. We almost had the feeling, when we had the Society so long our constant guest, that it was one of us. We had the pleasure of its meetings, each looked forward to with anticipation, as each was prepared for with emulation to be a better one than its predecessors, of seeing again the stalwart and constant attendants who came with faithful regularity to meet each other and promote the causes for which the old Society always strove, of mixing again in the whirl of interests which shaped the concerns of the medical profession by its representative men.

Until of later years it was a representative body in good part of delegates from the county societies. The older members will recall the faces made familiar by their yearly and energetic presence—Agnew, Roosa, Squibb, Loomis, Bryant, Bristow, Gray, Rochester, Potter, Didama, Elsner, Ward—they will recall their many associates, some like Jacobi yet with us, who worked out the fortunes of the Society and the profession through many strenuous years. Here at these meetings at Albany about everything that has been done for the betterment of the profession has been planned and worked out and accomplished. Year after year the progress of medicine was reflected, but also, here at the law-making center, the expanding legal definitions and enactments which regulate and protect the profession of medicine were thought out and built up. Present-day men hardly realize how much earnest thought and work entered into its business and fruition all through that first century.

Albany is about the oldest city in America, it celebrated its bi-centennial as a city thirty years ago. It was already an old city in 1806, when the Society first met here, a little one, to be sure, for there were no laid out streets above St. Peter's Church, which you will pass on your way to the place of meeting, and where the "Two-Steeple Church" now stands, direct descendant of the first old Dutch Church and

still possessing the old pulpit and other furniture. It was about the northern boundary of the city. St. Peter's has in its chimes today a bell given to it by Queen Anne. It stands at the corner of Lodge Street, which perhaps took its name from having been the camping place at the edge of the town for Indians coming in to trade. The first Capitol building, the cornerstone of which was laid that same year, stood west of this and partly on the site of the present edifice. To live compactly was a necessary condition of early times. The city had a population of a little more than 5,000 and was said to be the sixth in size in the country. It was mostly Dutch and it has been said that there were not more than five New England families.

We may picture the placid Dutchman smoking his evening pipe on the settee of the stoop in front of his gable-ended house, undisturbed by a care for the outside world, perfectly content with himself and his surroundings, with no welcome for strangers and their innovations. It had no pavements worth the mention, no sewers, a few oil lamps in the streets, and a public water supply which had just been provided, the water being brought in bored logs as pipes to a reservoir built in an admirable Egyptian style of architecture on land donated by Stephen Van Rensselaer, just where the present County Court House is located, in which the exhibits of this meeting will be contained. Though long out of use, it stood there till 1875.



MONUMENT ERECTED TO GENERAL PHILIP SHERIDAN IN FRONT OF STATE CAPITOL



JOHN SWINBURNE

First Health Officer of the Port of New York for whom Swinburne Island is named



JAMES MCNAUGHTON

President Medical Society of the State of New York 1836 1837



S OAKLEY VANDERPOEL

Health Officer of the Port of New York and Surgeon General of the State of New York during the Civil War

Albany has the peculiar distinction of having furnished two of the most efficient health officers the Port of New York has known Dr Swinburne established the Quarantine Station on a modern basis Dr Vanderpoel perfected its work until it was recognized at that time as the most perfect in the world

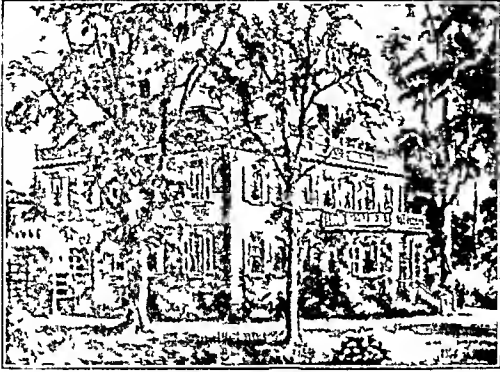
A change was beginning to come over the city and it was rousing from an eighteenth century Rip Van Winkle dream The Revolution and especially the Saratoga Battle at its doors had much to do with shaking it up The progressive spirit of the new century began to disturb it, new blood was transfused into it, it had become the capital city, the Erie Canal began to be talked about, very soon afterward Fulton ran the Clermont up the river and the State Medical Society began its yearly visitations



JAMES H ARMSBY

Today we are talking of deepening the river and making a seaport of Albany, we are preparing to put up signs all along the river and the railroads which cross each other from the four quarters here at the junction of the Mohawk Valley and the Hudson, saying, "Watch Albany Grow" We expect to be again at least the sixth city in America Albany is really awake now, having yet been somewhat dreaming, and has under a city planner much to show of modern time in the new Plaza which has taken the place of blocks of old buildings near where old Fort Orange once stood, in public buildings and hotels, modern and clean streets and business enterprise impelled by a most enterprising Chamber of Commerce Some may have memories of our cobble stone pavements a sort of street cover which isn't half bad when it is new and well covered with a cushion of dirt but hardly as good as none, which was the condition when the Society first began to come here Now, we have about 100 miles of well paved streets much of it granite with some brick and asphalt

There is not much of the olden historic time left for the visitor to look at. The old manor houses and the early-time homes and places of business, interesting as many of them were, have had to give place to modern structures. We have some of the curving streets left which conformed to the stockade which surrounded the ancient city, or followed the rural roads which gave exit. There is one relic of the past well worth while to see. General Schuyler, the real



THE SCHUYLER MANSION

Built in 1761, in the midst of a park that extended to the river. Washington, Hamilton, Franklin, Steuben, Riedesel, Rochambeau, Lafayette, Burgoyne were guests here.

hero of the Saratoga Battle, built for himself before the Revolution what has always been known as the Schuyler Mansion, on an eminence overlooking the river to the south of the little city. It still stands as he left it, a fine building, now owned by the State, in the custody of patriotic societies, it is open to visitors and very accessible. There is the mark of an Indian tomahawk on the stair-rail made during a raid by Tories and Indians to capture the general. Here Alexander Hamilton was married to one of General Schuyler's daughters, in 1780, and here Burgoyne was entertained with every courtesy after his capture.

There is an eminently worth while collection of antiquities, and also of art and paintings, in the building of the Albany Institute and Historical and Art Society. Beautiful relics of the past, interesting and historic, are on exhibition. It is not far from the meeting place of the Society on Washington Avenue.

It was to this Albany Institute that Joseph Henry, discoverer of the electric telegraph, contributed in 1827, and later presented papers on the electro-magnet in the course of his investigation. He was a native of Albany and professor of natural sciences in the Albany Academy. It was in the Academy building, which stands across the park from the County Court House, in a large room on the second floor, that he strung two miles of copper wire and sent the first electric signal, the first faint voice of the telegraph. A monument to Henry is in course

of preparation to stand in the Park in front of the building, where he won his fame.

Another school of which we are proud, established about the same time as that for boys, is the Albany Academy for girls. It has the distinction of being the oldest school in this country for the higher education of girls. St Agnes' School is a large institution of later time for academic work. The New York State College for Teachers is located in a fine group of buildings, and near it is a city High School of modern and model construction.

The general meeting of the Society will be held in Chancellor's Hall, which is the public assembly hall of the State Education Building. This is a recent structure near the Capitol, with a long frontage of an entire block, of unique architecture and so extensive as to provide for its large usage in supervising the entire educational work of the State. It houses most attractively the State Library, the Indian, geological, and other collections which are all on exhibition and good to see.

The County Building, in which will be held the section meetings and the exhibits, is one of the new buildings of the city. Next to it is the State Hall for the Court of Appeals, of classic architecture, built in 1840. The adjacent building is the City Hall, of which Richardson was architect, in which the Society meetings were formerly held. The Capitol of the State dominates all of what some day will be a goodly civic center.

In the time of Queen Anne a stone fort was built at what was then the head of State Street. The ground where the Plaza now is was owned by the crown and later by the city. About the middle of the 18th century, in the time of the French and Indian war, there was a large military hospital near where the State Hall stands today. This interesting structure is described by Dr. Thatcher of the Revolutionary army as a two-story building with wings, a piazza on each floor, accommodating 500 patients, besides rooms for officers and surgeons. Indeed, it is stated in a petition of citizens later as being large enough to quarter 800 men. After the battle of Saratoga there were 1,000 wounded of either army here, filling this hospital and the churches and private houses. Dr. Thatcher remarks in his diary that the British surgeons operate with dexterity but the Hessians are very clumsy operators and destitute of all feeling for their patients. He also says of General Arnold who was under his care for a leg badly fractured by a musket ball, "he was very peevish and impatient and required all my attention last night." The old hospital fell into decay not long after the war.

The first civil hospital was our present Albany Hospital, which was organized in 1849, about the time of St. Luke's in New York and the Troy Hospital in Troy. It was located until



ALBANY HOSPITAL

New Scotland Avenue Reached within two blocks by Pine Hills cars, auto bus on Pearl Street half hourly passes it

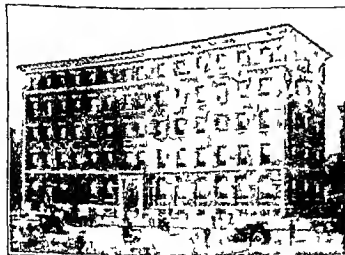
1899 on Eagle Street near the Medical College, since then on New Scotland Avenue where it has an extensive plant of four pavilions connected with a central building, with others for temporary care of the insane, for contagious diseases. Two miles distant is a hospital for tuberculosis, with a large nurses' home. During the civil war this hospital was taxed to the utmost with wounded sent from the front.

There are two other large general hospitals. St Peter's and the Homeopathic. In all of them there are dispensaries for out-patients, besides the South End Dispensary. The Child's Hospital and St Margaret's house for babies, near the Education Building do a beautiful work. The Maternity Hospital is of recent time and



ST PETER'S HOSPITAL

Broadway corner of North Ferry Street

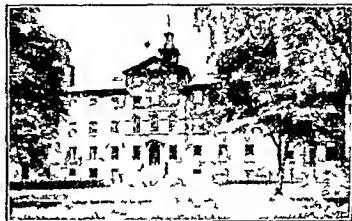


HOMEOPATHIC HOSPITAL

North Pearl Street North of Clinton Avenue

has every modern appliance. In the open grounds of Dudley Park in which stands the Albany Hospital are the Bender Hygienic Laboratory and the Dudley Observatory, an institution of Albany since about 1850.

The Albany Medical College has been in existence since 1839, and has had pretty uniformly a student body of 200, with a graduating class

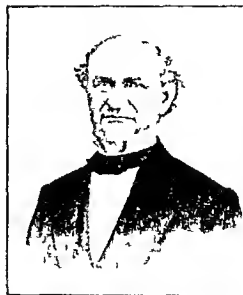


ALBANY MEDICAL COLLEGE

Eagle Street South of State Street

of upwards of forty, who largely compose the medical body of this region, and they fill the ranks of this Society. Albany has also a College of Pharmacy almost forty years old, likewise a Law School, that has been in existence since 1851, the alma mater, or as one has put it the mother-in-law of many eminent men. So, too the Medical School has had its men of high position but most of them have aimed for the place of the family counselor, and if the repute of the College is measured by their success it can be ranked as one of the most beneficent institutions in Albany.

We should not omit mention of the water filtration plant which the city is favored with. It has been saving us from water-borne diseases for twenty years, treating water in nature's way to purify it and saving us from a reputation that was not formerly savory. It is an extensive slow sand filter, through which twenty million gallons of water daily flow. People have come



ALDEN MARCH

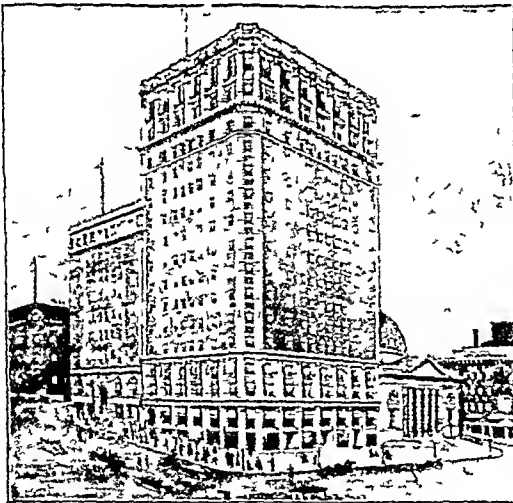
Founder of the Albany Medical College

from afar to see it, it is easily reached by taking a car to the north part of the city

Of late an intersecting sewer which carries all the city sewage to a disposal plant on Van Rensselaer Island has been constructed. It thus saves the Hudson River from pollution. The river front has been made presentable with concrete dock construction.

Some of these modern obtrusions into the quiet of the old town which the current century has disturbed, somewhat, as those of the Nineteenth roused it to new life, will no doubt bring joy to those who come to this meeting. Some may be old enough to recall as they get into the Ten Eyck the good times in the old Delavan House, the sociability of the smaller numbers, the annual dinners there with the ready voice and humor that always abounded. Happy the man who has treasures of memory, the happy preserved and the sad softened, and who yet enters into the present, secure in new friendships, with zest for what rolling time unfolds and ready for the new adventure.

One thing the good old town has always had which is seldom inventoried and possessed by few cities, a chief charm. Look out from your elevated window and



TEN EYCK HOTEL.

State Society Headquarters

note the wide outlook, the horizons which take half the circumference towards the south as the surface drops gradually to the Helderbergs, above which the blue Catskills lift, and see how much of her fairness nature blesses us with, or ride over the Southern Boulevard, taking in some of the parks on the way, and let the fair valley of the Hudson picture itself, or follow the Northern Boulevard and viaduct toward Cohoes and get an outlook over Troy and the Grafton Hills. Albanians themselves but half appreciate what attractiveness they can lift their eyes to from their windows if not too much shut in. We commend this as one of its assets for which Albany should be grateful. And we welcome our visitors to all we have.

## TABLE

Showing the membership of each county society, the number of delegates allotted to each under the new apportionment, and the ratio of delegates to members

Counties	Membership	Delegates	Ratio
Lewis	15	1	15
Schuyler	15	1	15
Sullivan	19	1	19
Yates	19	1	19
Queens-Nassau	164	8	21
Schoharie	21	1	21
Greene	23	1	23
Essex	25	1	25
Tioga	24	1	24
Orleans	28	1	28
Delaware	29	1	29
Richmond	57	2	29
Seneca	32	1	32
Madison	34	1	34
Rockland	34	1	34
Warren	34	1	34
Columbia	37	1	37
St Lawrence	76	2	38
Wyoming	38	1	38
Bronx	311	8	39
Genesee	39	1	39
Kings	895	23	39
Niagara	77	2	39
Washington	39	1	39
Wayne	39	1	39
Cortland	40	1	40
Dutchess-Putnam	121	3	40
Fulton	40	1	40
Allegany	40	1	42
Otsego	42	1	42
Chenango	43	1	43
Steuben	88	2	44
Broome	92	2	46
Clinton	47	1	47
Livingston	47	1	47
Franklin	49	1	49
Orange	99	2	50
Cattaraugus	51	1	51
Rensselaer	102	2	51
Chautauqua	104	2	52
Montgomery	54	1	54
Chemung	56	1	56
Schenectady	111	2	56
Westchester	280	5	56
Saratoga	58	1	58
Oneida	180	3	60
Oswego	60	1	60
Suffolk	119	2	60
Herkimer	61	1	61
Ulster	63	1	63
Tompkins	64	1	64
Albany	204	3	68
Cayuga	71	1	71
Monroe	358	5	72
Jefferson	74	1	74
Onondaga	225	3	75
Ontario	80	1	80
Erie	668	8	84
New York	2781	23	121

## Medical Society of the State of New York

### IMPORTANT NOTICE

The members of the House of Delegates will please take notice that the meeting will be called at 3 P M

### THE ALBANY ARTICLE

It was with great satisfaction that the managing editor secured the consent of Dr Frederic C Curtis, elder statesman but live member of the living generation, to prepare an article on Albany. Dr Curtis, a former president of the State Society, 17 years its secretary, and 48 years a practitioner of Albany, has written out of the fullness of his heart of the city he loves.

Last year the secretary adopted a policy of asking some prominent local practitioner to write an article upon the Convention City, to be published in the JOURNAL and reproduced as a booklet. It is expected that the article will set forth the best phases of that city and the elements in which it may take just pride. Fortunately for the Empire States it has no city which may not take just pride in the things it has accomplished and may not set forth the things in which it is characteristic and in which it differs from other cities. Last year Dr T Wood Clarke set a high standard for such an article in writing of his native city, Utica. This year Dr Curtis has fully maintained the standard set by Dr Clarke. We commend a reading of the article on Albany. It will add an interest to every member visiting that ancient city. He has unintentionally described himself in the following words: "Happy the man who has treasures of memory, the happy preserved and the sad softened, and who yet enters into the present, secure in new friendships, with zest for what rolling time unfolds and ready for the new adventure."

### County Societies

#### RICHMOND COUNTY MEDICAL SOCIETY

REGULAR MONTHLY MEETING NEW BRITAIN, N Y  
WEDNESDAY APRIL 10TH 1918

The meeting was called to order at the Staten Island Academy by the President Dr John D Lucey.

The minutes of the preceding meeting were read and approved.

Mr Clark of the Life Extension Institute of Manhattan explained the Laboratory Service offered by the Institute. General discussion followed.

Dr Frederick Coomley, Chairman of the Committee on Legislation, read the following resolutions which had been authorized at the previous meeting. The Richmond County Medical Society urge upon you the necessity of opposing the Health Insurance Bill intro-

duced by Senator Nicoll Senate Int 496, for the following reasons:

*First* That the medical profession, which is devoting itself to the great study of preventative medicine and is whole heartedly in favor of any measure that provides for a more scientific medical care of the self respecting workman, should have adequate representation in such a bill. Provision for such representation was included in a bill presented to the House of Delegates of the State Medical Society held at Utica, N Y last April but has been entirely ignored in the present bill.

*Second* That the fees for the medical attendance and the Hospital compensation are not definitely stipulated.

*Third* That Section 12, of Article 2 is too indefinite and would result in great confusion.

*Fourth* That the additional insurance of the workman's family is an unjust burden upon the employer and the final adjustment of the cost will fall unequally upon the workman's family.

Copies were sent to Senator George Cromwell and Representatives Thomas F Curley and Henry A Seeberg.

In regard to adequate rank for Medical Officers of the U S Army the Society adopted the following: The Richmond County Medical Society desires to put itself on record as heartily approving the granting to Medical Officers in the service of the United States a rank corresponding to their duties. This may easily be limited to the present war but will greatly improve the medical branch of the service.

We would respectfully urge our Representatives to use their efforts in support of the Owen Bill (S 3748) and Dyer Bill (H R 9563) now before Congress.

The Secretary was directed to forward copies to Senators William M Calder and James W Wadsworth Jr and Representative Daniel J Riordan.

Dr Edward S McSweeney of Manhattan spoke on 'Prolonging the Life of Tuberculous Cases' and the subject was discussed by Drs C R Kingsley Jr, G P Jessup and C E Pearson. A vote of thanks was tendered the speaker for his interesting and instructive paper.

The meeting then adjourned to the Staten Island Club where a collation was served.

### MEDICAL SOCIETY OF THE COUNTY OF GENESEE

REGULAR MEETING BATAVIA, N Y, WEDNESDAY APRIL 10 1918

A regular meeting of the Medical Society of the County of Genesee was held at the Holland Club in Batavia on Wednesday, April 10 1918, at 830 P M. The President Dr Andrews, presided.

Scientific program: Dynamics of Hernia by Dr Harry Trick of Buffalo. Discussion by Dr W D Johnson of Batavia.

Venered Diseases by Dr Edward Clark of Buffalo.

The Society decided to remit dues of members in the service of the country and to await action of the State Society in May before proceeding further.

Dr Albert T Lytle of the 8th District Branch was present and spoke on several topics—health insurance, narcotic drug legislation and the question of dues of members now in the Medical Reserve Corps.

**A HANDBOOK ON ANTISEPTICS** By HENRY DRYSDALE DAIN, DSc, FICM, FR.S, and EDWARD KELLOGG DUNHAM, MD, Emeritus Professor of Pathology, University and Bellevue Hospital Medical College, Major, Medical Officers Reserve Corps, U S A The Macmillan Co, New York, 1917 Price, \$125

In this little book are collected methods of preparation and uses of the newer antiseptics which have been endorsed by military surgeons during the three years of world conflict, as well as modifications of the older antiseptics

Requisite information on the chlorine group, the phenol group, salts of the heavy metals, dyes and miscellaneous antiseptics is presented in convenient form to aid those undertaking the care of the wounded. Certain reports appearing in the book have been gathered by the British Medical Research Committee, and have already been published in the *British Medical Journal* and the *Journal of the Royal Army Medical Corps*. This committee is largely responsible for the advance in our knowledge of antiseptics for war wounds.

The purely surgical aspect is not included here. A brief statement appears in regard to the use of certain disinfectants of the chlorine group for sterilization of drinking water and disinfection of hospital ships. The treatment of the carriers of infectious germs is included.

**ELEMENTS OF HYGIENE AND PUBLIC HEALTH** A Text-book for Students and Practitioners of Medicine By CHARLES PORTER, MD, BSc, MRCP (Edin) Illustrated 411 pp, 12mo Lond, Henry Frowde, Oxford University Press, Hodder & Stoughton, 1917 Cloth, \$4 15

One must agree with the author when he admits in his preface that "there is nothing particularly original" in the contents of his book.

The author endeavors to give a comprehensive review of the tenets of modern hygiene and public health in the twenty-eight chapters and about 400 pages of his book. The subject matter is dealt with from the standpoint of British practice in public health administration. The arrangement of the chapters is rather unsatisfactory and the chapter on "Housing" describes in detail many methods now obsolete in the United States, and one wonders whether these methods are still in vogue in Great Britain.

The book is of interest to those who wish to be acquainted with the practice of public health administration in England, but cannot be recommended to the American practitioner. G M P

**A BRIEF INTRODUCTION TO THE GENERAL PRINCIPLES OF THERAPEUTICS** By FRANCIS H McCRUDDEN, SB, MD, Director Laboratories, Robert B Brigham Hospital, Boston, Asst Prof Applied Therapeutics, Tufts Medical School, Boston Gregory, 126 Massachusetts Avenue, Boston, 1917 Price, \$1 50

The modern method of studying and treating disease from the standpoint of functional or physiological change rather than anatomical findings, has placed therapeutics upon a more rational basis than formerly. The author if this little handbook lays great stress on the physiology—both normal and diseased—of the various organs of the body and then outlines in a general way the treatment of their diseases. Care is taken not to confuse the beginner, for whom principally the work is intended with preparations of drugs and their doses, but the rational method of aiding nature to alleviate or restore lost function is briefly though clearly set forth.

There are sections on heart disease, diseases of the kidneys of the vessels of respiration, of the gastrointestinal tract followed by a consideration of diseases of general metabolism, other chronic diseases, concluding with specific infectious diseases.

Therapeutic measures other than drugs are really given

more prominence than actual medicinal preparations. Thus the student does not get the pernicious idea that certain diseases call for certain drugs but is carefully imbued with the physiological or functional standpoint of therapeutics. W H DONNELLY

**DREAM PSYCHOLOGY** By MAURICE NICOLL, BA, MB, BC (Camb), Capt (Temp), RAMC London, Henry Frowde, Hodder & Stoughton, Warwick Square, E C, Oxford University Press, 35 West 32d Street, New York City, 1917 Price, \$2 00

Medical psychology in the past few years has received an impetus which places this branch of scientific research well above many of the more thoroughly studied branches of either psychology or medicine. The recent studies of criminology, exceptional children, psychoanalysis, religion, dream-states, Binet tests, and scores of other investigation, prove that man is at last trying to find out how and why one reacts to certain mental processes.

Freud and Jung have made the study of dreams of greater value than ever before had been attempted by any previous scientific investigator. The writer of this little work has attempted to combine some of the ideas of his predecessors and associate them in a less radical epitome. Of especial interest is the list of examples, for the most part war-dreams are used as illustration. Dreams of shell-shock, air-raids, etc, are explained in detail.

On the whole the book, is very timely, concise, and quite complete when its size is taken into consideration. There are nineteen chapters each of which attempts to explain a definite attitude toward a mental complex. The language is simple and the subject matter is handled in a much more readable manner than many other writers who have preceded Dr Nicoll.

SIEGFRIED BLOCK

## Deaths

GEORGE FREDERICK BROOKS, MD, New York City, died April 26, 1918

CLARENCE A CHALONER, MD, Stephentown, died March 20, 1918

JOHN F CLEVELAND, MD, Le Roy, died April 15, 1918

WALTER S DALY, MD, Ogdensburg, died March 18, 1918

WILLIAM A EWING, MD, New York City, died April 21, 1918

THOMAS B FERNALLD, MD, Norwich, died March 26, 1918

OLIN J FRYER, MD, Greenwich, died March 14, 1918

CHARLES H GLIDDEN, MD, Dansville, died March 25, 1918

EDWARD P H GRISWOLD, MD, Niagara Falls, died April 2, 1918

GEORGE F HARRIS, MD, Binghamton, died March 18, 1918

EDWARD W HEIM, MD, Buffalo, died February 16, 1918

ALFRED B HUESTED, MD, Delmar, died February 23, 1918

JOHN HUTCHENS, MD, Canandaigua, died February 23, 1918

WILLIAM A MOORE, MD, Binghamton, died April 26, 1918

MFERRITT E PROCTOR, MD, Lake Placid, died April 4, 1918

MAURICE J SILVERMAN, MD, New York City, died April 11, 1918

WILLIAM H WETMORE, MD, Lake Placid, died March 28 1918

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M.D. Editor  
FLOYD MILFORD CRANDALL M.D., Acting Editor

Business and Editorial Offices 17 West 43d Street New York U.S.A.  
Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N.Y. U.S.A.

## COMMITTEE ON PUBLICATION

S. W. S. Toms M.D. Chairman Nyack  
W. Meddaugh Dunn M.D. New York

Edwards Livingston Hunt M.D. New York  
Frank V. Fleet M.D. New York

A. Clifford McCracker M.D. Syracuse

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

JUNE 1918

No 6

## ORIGINAL ARTICLES

### THE PSYCHOLOGY OF THE WAR\*

By Hon. JAMES M. BECK, LL.D.,  
NEW YORK CITY

*Mr. President and Members of the Medical Society of the State of New York*

**P**ERMIT me in the first place to express my grateful acknowledgment of the great honor you have done me in inviting me to deliver the annual address at this session of your Society. To be honored by one's own profession is a great distinction, to be honored by another profession is a greater one. Your compliment is not to me, but rather a manifestation of the extraordinary times through which we are passing. By breaking the precedents of your Society in inviting a layman to deliver the annual address, you indicate that in this fateful hour for humanity all considerations which in normal times intimately affect your profession are subordinated to the great crisis which now confront our nation and humanity.

In a later session of your convention one of your members will discuss the function of the liver in echinopsia. That question greatly concerns the patient whose particular liver happens to be deranged but it is of minor importance to the common weal as compared with the function of democracy in civilization for I am persuaded that when this war is over and we

take a reckoning it will not only be a question, as our President has said, of making the world safe for democracy, but the more difficult problem of making democracy safe for the world, because human society is bound to undergo a radical reconstruction when the great day of reckoning arrives.

I am not here with a prepared speech in literary form but this in no respect manifests any lack of appreciation of the compliment of the invitation you have extended to me. In these days when my soul has been stirred from the very beginning of the world war to its very depths, I have found my emotions such that I could not sit down in cold blood and prepare an academic essay or an ornate oration. You must allow me therefore, to speak to you from my heart, and if there be any merit in anything I say, it will be in its sincerity. It occurred to me that something greater was expected of me by the invitation of your Society than a conventional patriotic address. You are members of a learned profession and therefore are probably more familiar than he who has the honor of addressing you with the mere academics of the world problem. I prefer, in addressing an audience of learned and thoughtful students of life both in its physical and psychological aspects to discuss for a little while today the psychology of the war, and by that I do not mean the psychology of the art of war but more precisely the psychology of the nations engaged in this war, for I am deeply

\*Annual Oration at the Annual Meeting of the Medical Society of the State of New York at Albany May 21 1918

tions on this point and he told me that when he was able to talk privately with his German friends with doors and windows closed, he would find a sharp cleavage among the German people not only as to the policy of the world but as to its righteousness, and he thereupon, without knowledge of Cambon's line of cleavage, gave the same indications of a division between the men who were swollen with pan-Germanism or impelled by material interests and the more lowly and oppressed German people

In the teeth of some sentiment to the contrary, President Wilson has insistently, and as I think wisely, proclaimed a distinction between the German government and the German people. There is little hope for the future peace of humanity unless there can be from within Germany a regeneration of its masses. In other words, if the masses of Germany are as wicked in thought and purpose as their masters, there will be between nations even after peace is effected an irrepressible conflict. The cry of the world in my judgment should be, "Down with the Hohenzollerns" for there will be no peace while a Hohenzollern remains upon the throne. We ought to go further and say to all Germany as well as to Prussia, "As long as you stand at the bar of the world, cynical and defiant, naked and unashamed, so long will we fight you and have no intercourse with you. We will not buy from you, we will not sell to you, we will not clasp your hand, but we will drive you from Civilization as Cain was driven by the flaming sword of the angel from the gates of Paradise."

In an article I wrote for *Harper's Monthly* last September, in reply to Dr. Kuno Francke of Harvard University, I gave my reasons for believing that at least a class of German people were not beyond the possibility of regeneration, for as long as there is one Carl Liebknecht in Germany, we need not wholly despair that after we have won this victory there will be a regeneration through defeat of what was once a noble people.

Who, then, is Lærtes? Lærtes was a character in Hamlet who acted upon his passionate impulses. His passions urged a certain course, and then with wings as swift as meditation he swept on to his revenge. It was that same spirit that made him a pliable tool of the wicked king and made him a party to the treacherous and indefensible stratagem of the poisoned foils whereby he fell. Who is Lærtes? It is Austria. When the whole history of this war comes to be written what a pitiful object Austria will be. Austria at first refused to discuss the question of Serbia with Russia and Europe, but when it saw that Russia would not yield, Austria, on July 31, 1914, seeing that Germany was driving

it into an abyss of disaster, suddenly of its own accord announced that it would take up the matter of the disputed issue and discuss it with Russia, and then within a few hours, to defeat any pacific solution of the matter, the conspirators of Potsdam sent an ultimatum to Russia which no respecting sovereign nation could possibly accept. Austria, like Lærtes, has been the tool of the master, Prussia, and like Lærtes, it has perished from its own poisoned foil. If Germany should be triumphant, Austria becomes merely a vassal state. The proud prestige of the Hapsburgs is gone forever, and even before the end of the war its doom as an independent nation is sealed. What a beautiful touch there is in the last act when Hamlet is told by Lærtes of the miserable stratagem of the poisoned foil, and while Hamlet could not forgive, he yet says "Heaven make thee free of it."

Rosencrantz and Guildenstern, whom Hamlet would as soon trust as "adders fanged," are obviously Bulgaria and Turkey.

Who was Polonius? He was a precise, old formalist, once a very able statesman, but unfortunately his brain had ossified into maxims and phrases. Although he discoursed most wisely, it was of the graphophone type of wisdom. He could give advice to Lærtes or to Hamlet, but each line was a record of memory and not of creative impulse. The Polonius of this world tragedy is Russia.

In the summer of 1916 I was on the battlefield in France. I had the honor of meeting General Joffre and Sir Douglas Haig. Each of them was confident that the spring of 1917 would see a conclusive victory for the Allies. General Joffre said to me, "How soon are you going to return to America?" I replied, "In a few weeks." He said, "Come back in twelve months and the war will be over." They knew they had on the Western front more airplanes, more artillery, better men, and more men than Germany could possibly put into the field. They knew that the wealth of Great Britain and France had been poured into Russia to equip her teeming millions. They had reason to expect a converging pressure like two blades of a pair of scissors, for the Germans could not hold back the millions on the Eastern Front if she were giving her strength on the Western Front, and vice versa. What happened? There crept into Russia those wise maxims and phrases that were the undoing of Polonius. It was "peace without victory", "peace without annexation and indemnities", "down with capital"; "universal freedom", "no order or discipline." All these specious phrases ran through the heart of Russia as poison. What was the result? This mighty Colossus of the north

crumbled as no nation ever crumbled. If Russia had not been seduced by visionary doctrinism of the socialistic type, it could, with adequate financial resources, have defeated Germany and Austria, because the Russian soldier is a good soldier if he only has behind him an efficient and honest government. But that great power crumbled under the misadverse of a bastard Pacifism. Like Polonus behind the curtain, Russia lies slain.

One of the marvelous arts of Shakespeare is the fact that he can take a minor character and like a skillful artist with a few sweeps of the brush, can hold the mirror up to nature. In the minor character of Horatio, Shakespeare represents one of his noble characters. With the temperamental, emotional vacillation and irresolution of Hamlet he contrasts the well-poised, serene steadfast soul, Horatio always true to his ideals, loyal to his friends even unto death and with a clarity of vision, keenness of insight and a moral poise that made him the noblest character in the play. In the scene that precedes the play within the play, Hamlet himself describes Horatio,

"As one in suffering all that suffers nothing  
A man that fortune's buffets and rewards  
Hath ta'en with equal thanks and blessed are  
those  
Whose blood and judgments are so well commingled  
That they are not a pipe for Fortune's finger  
To sound what stop she pleases"

I but anticipate your thoughts when I say that in this world tragedy Horatio is France. What a volume of apology the Anglo-Saxon races owe to France. Think of what we thought before this war began. We had gone through the streets of Paris and seen the poilus, with baggy red trousers and excessively long blue coats, tramping along in a seemingly slovenly way, and then we contrasted them with the goose step of the Germans and we said that France will be crushed when the world war comes. We regarded them as a volatile exuberant and inconstant people who as their own champagne, were as effervescent bubbles floating idly to the surface of human life. How you and I misjudged France. When I left Rheims as far as I could see behind the long brittle lines of trenches there were the vineyards from which champagne is distilled and who tilled them when the husbands and sons—brothers and fathers of France up to 45 and 55 years of age were in the trenches? It was the women and children of France. When the war is over and you take a glass of champagne of the vintage of 1914 and 1918 you may then realize that it has been distilled from their

sweat and tears. From the first days of mobilization until two years later, in 1916 when I was at Verdun, when the Germans were nearer to it than they have ever been since, I saw the quiet, steadfast determination of these poilus, who at a sacrifice at that time of 250,000 men had said to the mighty army of the invader, "Thou shalt not pass," I realized that here was a people so noble, so transfigured in the glory of self-sacrifice that words are powerless to say what you and I and all noble men now think of France. Therefore you will echo Hamlet's final words when he said to Horatio

"Give me that man that is not passion's slave  
And I will wear him to my heart's core,  
Even to my heart of hearts as I do thee"

Ophelia caught in the vortex of this world tragedy is obviously Belgium. Belgium can say with Ophelia, 'we know what we are but we know not what we may be'. There is one dissimilarity in this analogy because, Ophelia is marked by weakness of character. No one would impute weakness of character to Belgium, who, with a standing army of 100,000 men, with over 500,000 Germans pouring across her frontiers, with a certainty of annihilation for the time being held the gates as the Greeks did at Thermopylae and it required the German army sixteen days to go through Belgium, where the schedule of the General Staff expected six. All honor to Belgium as we honor the Greeks of Marathon and Plataea.

Who is Fortinbras of the World Tragedy? He is the son of a Norwegian Viking. Shakespeare with one of his deft touches thus describes Fortinbras

"A deberte and tender prince  
Whose spirit with divine ambition puffed  
Makes mouths at the invisible event  
Exposing what is mortal and unsure  
To all that fortune gets and danger dare  
Even for an egg-shell. Rightly to be great  
Is not to stir without great argument  
But greedily to find quarrel in a straw  
When honor's at the stake"

England is Fortinbras

On the night of the first of August, 1914 England was neutral. Her policy was one of watchful waiting. She was obliged to wait for some clear issue but when Belgium through the words of its noble King, appealed to the King of Great Britain for aid against the threatened invasion of Germany, England never hesitated. There was no direct benefit to her in entering the quarrel the ultimate outcome of which no human being could foresee. While

she had an incomparable fleet, her army consisted of only 250,000 men, one-half of which was scattered to the four ends of the world, with which to defend her far-flung empire, and how could she tell that India, with two hundred and fifty millions of that race, might not rebel? That South Africa, conquered ten years before, might not rise against her? How could she tell with certainty what might happen in Australia, New Zealand, Canada, or any of her world-wide possessions? Yet England never hesitated when the King of Belgium appealed to her aid. Within a few hours, she sent her ultimatum to Berlin that unless by midnight of August 4th she had a positive revocation of the attack on Belgium, England would fight at all hazards. By August 8th, nearly 100,000 men were crossing the Channel, and it was the British who, in taking their positions to the left of the French army held like a stone wall at Mons. It was that gallant little army that by attacks and counterattacks on the great retreat put up a stone wall defense and gave General Joffre an opportunity to perfect his masterly strategy that culminated in the victory of the Marne. England's honor was pledged to the defense of Belgium, and truly she made "mouths at the invisible event" and staked her whole empire upon the issue of the struggle.

We now come to the last, and to us most interesting part of the analogy. In my judgment, Hamlet has been our own country. Hamlet is one of the noblest characters that Shakespeare ever drew. Indeed, it may be said to have been the favorite child of his fancy. He loved this child he had created, and what a marvelous creation the young Prince is. That he intended to make him a noble soul, barring "the stamp of one defect" is shown when Horatio leaned over the dead hero and thus pronounced his epitaph:

"Good night, sweet prince,  
And flights of angels sing thee to thy rest."

I am describing but not disparaging America when I liken her to Hamlet. Our nation has all his virtues and some of his faults. He had a noble idealism, great courage, but a temperamental mind.

Who then is the Hamlet of this tragedy? Which nation had the "scruple of thinking too precisely on the event" and thereby let go by "the important acting of the dread command?"

Hamlet was a typical scholar in politics, for the tragedy of that name is a study in college life. The rooted habit of his mind was to talk about evils rather than act to redress them, and that is also a characteristic of America today may be demonstrated by the fact that while there is no nation in civilization in which

so much is written and said from day to day with respect to the current issues of the hour, there is certainly no democracy in which the power of public opinion has generally less weight. In a Presidential campaign we will work ourselves to a state of intellectual frenzy about matters that seem vital to us, vital to the perpetuity of the Republic, and on the day following the election all is forgotten as though it had never been. We take in all our problems a too academic interest, and we drop them the moment they cease to interest us. Hamlet's keen enjoyment in his rhetorical powers was also obvious. He talks to everyone from the king to the sentinel and when he has no one else to talk to, he is quite content to talk to himself. In the course of these rhapsodies of words, he at times castigates himself with reproaches and at others speaks in a tone of self-evident confidence and exultation. But he spends too much of his strength in words.

In discussing this subject, and I must do it briefly, because I have already trespassed too long upon your patience, I can merely suggest the analogy and not amplify it. In considering this question you must remember that every nation has a dual personality, and especially America. Thus America has a personality that is the aggregate of its living citizenship. In the second place, it has a personality that comes from its institutional history, in other words, there are two Americas, first the America composed of a hundred million of sentient human beings. That is what Colonel Roosevelt once humorously called a "polyglot boarding-house," people of all races and conditions, from abject ignorance up to the loftiest heights of knowledge where sit the members of the Medical Society of the State of New York. Then there is the historic personality of America which began when the Pilgrims landed on Plymouth Rock, which developed in our colonial history, the Revolutionary War, and finally the Civil War, and welded us into a unified national life. This America found itself face to face with a great problem as Hamlet did. Take the aggregate of our living citizenship, and the difficulties of it are twofold. In the first place, we were swollen with material prosperity, and if there be any lesson in all history it is that nations have their decay in material ease and find their strength in sacrifice and hardships. We had come out of the Civil War a powerful body. If this world war had happened in 1865 America from the start would have played a stupendous part, because we had gone through the fires of affliction and had come out of it as hard as steel. But fifty years had passed and we became infected with too much prosperity. When we were on the eve of this war America was characterized by an almost incred-

ible levity and frivolity. I could illustrate this by taking any department of activity. Let us take the theater. Where formerly three-fourths of the plays were serious, and one-fourth trivial, this war found a condition where three-fourths of the theaters in New York represent nothing more than the muddy drivel of the "Great White Way," and only one-quarter or possibly, one-tenth of the theaters in New York made a serious appeal to the intellect. Take literature: it was the same. Take any department of activity, and there was this levity of spirit. I mention these things to show the frivolity of our people which marked our life in 1914. Hamlet says before the duel in the first act "I have foregone all custom of exercise," and in the last act the queen mother says of him "He is fat, and scant of breath."

Hamlet was over-nourished, a child of luxury who did not train physically, and who became overdeveloped. He shows the evidences of excessive indulgence which saps the moral power of the will. You physicians are familiar with the trouble. When a man of sedentary life comes into your office who is too fat mentally, dull, and heavier physically than he ought to be, you know what is the matter with him. It is because he has foregone all custom of exercise" as Hamlet did. Our American people would rather sit on the benches and watch a game of baseball than to play the game. They had become soft and flabby. In the second place, our people by force of tradition and heredity were somewhat provincial in our world outlook in 1914. You could not drive into the mind of the average American for a year or two after the war that his nation had any practical interest in it. His interest was purely academic. I sat down to luncheon in New York a year after the war started with a Governor of a Southern State and his Attorney-General and I said to him:

How do your people feel in regard to the war?" He replied "When the price of cotton is up we are satisfied and when cotton is down we are mad at England." I said, "Do you mean to take the greatest moral crisis of the world and define it in the terms of the cost of cotton?" He turned to the Attorney-General and said "What do you say?" The Attorney-General replied "You are absolutely right, our people care absolutely nothing about the war, but we do care how it affects the price of cotton."

West of the Mississippi many newspapers would not give as much attention to the war in 1914 and the two following years as they gave to the schedule of the coming baseball season. Therefore it is true that this supreme crisis in history found the American people, es-

pecially west of the Alleghenies, a nation of provincials so far as world politics are concerned. It was not that we were not educated, but the fact was that we preferred to dismiss the subject of our entry into the war from our minds and went on our way rejoicing.

Future history will regard with amazement the fact that before the sinking of the "Lusitania" there was barely one educated American in every ten and one American in every hundred, educated or uneducated, that ever seriously considered the possibility of our going to war, yet it was as plain as the fingers on my hand that we would be drawn into it.

Hamlet was a student at Wittenberg when a great problem came to him. He preferred the books of Wittenberg to the politics of Denmark. With a throne at stake he preferred to return to Wittenberg. We have our Wittenberg. It was our policy of isolation. We were willing to retain neutrality and allow the foundations of civilization to crumble.

This was the attitude of the living generation of Americans. But what of historic America? We come to points more fundamental. What was the trouble with Hamlet?

There have been two great theories of Hamlet. He was irresolute through an excess of the contemplative faculty, and therefore his trouble was subjective and the other theory is that his troubles were purely objective. Of these two theories in my opinion, the intention of Shakespeare is the former. If you are interested in this subject, get Coleridge's masterful analysis of Hamlet and you will see the root of Hamlet's psychological difficulty. Briefly speaking, the theory of Coleridge is that there is in every healthful personality two faculties, one of which is subjective and the other objective, and between the two there must be a nice equilibrium. If one excessively develops his faculty of contemplation he has much less power to act. If, on the contrary, like Laertes, he lives exclusively in the external world he acts impulsively without due deliberation. In Hamlet we have a man of prodigious intellectual activity who was a dreamer for whom the outer world had no interest at all except as it was seen in the mirror of his internal conscience. Shakespeare makes Hamlet say,

"For thus the native hue of resolution  
Is sicklied o'er with the pale cast of thought,  
And enterprises of great pith and moment,  
With this regard their currents turn awry  
And lose the name of action."

Our country originally was a nation of pioneers. We came here to forget Europe and its troubles. We developed our colonial life but

being then weak we were made the shuttlecock of European politics. Out of that grew a distaste for any participation in the broils of Europe. Our Revolutionary War came on, and we were obliged to look abroad for aid, and eventually we received it from France. On the termination of the Revolution we were exhausted. Our currency was not worth the paper it was written on. We had no navy or army. George Washington felt it was essential that America should have for a period, which he fixed at twenty years, a "rest cure" without entangling alliances, and with a complete detachment from the affairs of Europe, and hence there grew the tradition that the American people were apart from the rest of the world, as though the rest of the world was in Mars and not across the Atlantic Ocean. In the meantime, steam and electricity had welded the world into one unified economic power and made the Atlantic Ocean little more than a great ferry.

Rarely until 1914 did our mind project outward. We were at all times obsessed with the idea that the affairs of the world beyond were a matter of little concern to us, and so we were precisely as young Hamlet at Wittenberg—so absorbed in our introspective contemplation, in our internal development, that unfortunately this world crisis met us at a time when we were least capable of playing a great part in it. Some of you may question my premises. I can only say, that had we been capable of playing a great part after the sinking of the "Lusitania," this war would have been over at this hour. Had we then prepared and developed an army of a million men we would not only have not been in the war, but Russia probably would not have crumbled, and the Allies would have triumphed with our moral aid. From the time civilization was challenged on August 1, 1914, to April 2, 1917 we were not even prepared. I am not criticising the Government or any administration of the Government for that is a controversial subject into which I do not care to go on this occasion. The point I want to make is that by a psychological defect of character, by an excessive development of the introspective faculty, by our absorption in our own internal affairs, by our spirit of provincialism, which marked our outward view upon the rest of the world, we, like Hamlet, "let go by the important acting of the dread command" which came to us in 1914. I will not discuss how far our failure to act promptly was due to shortsighted leadership. About that men will differ for generations to come.

What if the analogy should be carried to the end? Remember, that Hamlet does avenge his

father's murder, but he perishes because he had been dilatory in rising to the great mandate given to him, but I have confidence that the analogy will stop before it reaches that disaster. To my mind there is a profound awakening of the American people. We are not the same people we were three months ago. We have put aside our provincialism and are now taking a world view of affairs and all the latent power that is within us is struggling to play our part in this great war for the welfare and freedom of mankind. Remember that Hamlet but for his excessively introspective faculty would have been master of the situation. He had the power of brain, of mind, of body, of soul, to have succeeded to the throne of Denmark. He failed through only one defect, his irresolution. We are putting aside that difficulty. Whatever our faults have been in the past, this great crisis of history has shown us the path which we must tread at any sacrifice. We now know the destiny that the God of nations has reserved for us and the great part in the drama of the world's history we are to play. I believe firmly that when this war is over, and when our cause has triumphed the United States will be accorded the moral leadership of the world. This will not come from phrase making for words count for little in this world crisis. We in this country attach too much value to words and phrases. We will be judged by what we do on the fields of Picardy and Flanders, and if as I believe, we are to be the determining factor in the battles in France, so surely will the kingship of Hamlet be recognized.

"There is a divinity that shapes our ends,  
Rough hew them how we will."

We have rough hewed our ends by trying to be a hermit nation, but a divinity has shaped our ends. The God of nations never intended that this nation should be a laggard in the greatest crisis of history. A witty and philosophical New York lawyer, Job Hedges, once said that "God Almighty took us by the scruff of the neck and the seat of our pants and threw us into the war." It is so. He has said in a little less poetical language what Shakespeare meant when he said "There is a divinity that shapes our ends." God has led us into this war. He has given us a great work to do, and in this belief lies my confidence in our triumph and the triumph of our Allies, for behind us is not only a just cause, the potential power of the great democracies of the world, but also the infinite power of the God of nations.

## PRESIDENT'S ADDRESS\*

By MAJOR ALEXANDER LAMBERT, M.D.,

NEW YORK CITY

*To the House of Delegates*

WHEN you honored me with the presidency of this Society I little thought I should spend nearly the entire period of my office so far away from the world I looked forward to with so much pleasure, but it so happened, and I could not have been blessed with a friend and helper more efficient than Dr Halsted who has so generously and so ably filled my place. The Society has lost nothing during my absence and has gained a good deal in having Dr Halsted take the place that I should have filled.

I do not know exactly what has occurred in the Society except what I have learned since I came back. I can see certain tendencies as any one can, but I thought you would be more interested in a report perhaps of what has been occurring across the water and the work I have been doing thru you would be in my recommendations of what some one who is not here might think you ought to do.

The questions that come up constantly among the men whom I have met since I have returned are, what general impressions have you received from your work? How long is the war going to last? What have we done? How much does it amount to? I think it can be accurately summed up in saying that the moral effect that we have had by entering the war is way beyond the appreciation of any one who has not seen it. The physical effect we have attained is far smaller than any one realizes who is not engaged in the work from day to day. It simply means the physical has not yet caught up with the moral effect and stirring with an unprepared condition the human machine necessary to build it up has not been constructed. While things are taking on unusual activity and are developing rapidly the physical effect is not yet up to the moral effect.

It was a very remarkable scene on the Fourth of last July when our American troops marched through the streets of Paris. First came the cavalry which was followed by the rapidly marching troops. When the French population saw them they literally mobbed them; the women hugged the men, they threw garlands of flowers at them and actually interfered with the entire procession. The men finally struggled through and after marching several blocks were able to regain their lines. I have never seen a greater ovation than was paid to our men. It was an exhibition of how the people felt all over France.

Delivered before the House of Delegates of the Medical Society of the State of New York at Atlantic City May 20 1918

This was the spirit and this spirit has grown to an enormous degree as the months have passed, and the friendship between the French and the American private has increased as they have known each other better and better. A year ago the French soldiers were very weary of the war and discouraged. Today they are eager and anxious to fight.

In the first two days in the breach that happened about Novem, when the Germans broke through there was a serious gap between the French and British armies in which there were no troops. One of the French generals told me as I was chatting with him the next evening in Paris that there was a split but, he said, we put a cork in it, we held to. We did it at the point of the bayonet, but we did it. The gap was closed without artillery, the troops rushed in without artillery and checked the advancing sweep of masses of Germans. They fought like tigers succeeded in closing the gap, and held it unaided with their bayonets. That represents the spirit over there to day. They are looking to us to come and help them still further.

I have been working as you know with the Red Cross. They asked me to take care of and supervise the medical work of that organization. The Red Cross is not a private society, but one incorporated by the United States Congress, and it is under the command of the President of the United States the same as the army is, governed and controlled by a board of directors on which are representatives of the Departments of State of Justice War Treasury and Navy. In its incorporation is stated that its work is to give volunteer care to the sick and wounded. It is the society to which is entrusted the voluntary aid of the American people to the army and navy. In other words it is expected to represent the entire population in helping our army and navy in any way that it may deem desirable to aid them and it means in its broadest sense to render aid that any man would do to help another and has been so construed by the Attorney-General.

The care of prisoners in the Central Empire is attended to by the central committee of the International Red Cross in Geneva and each arm of the Red Cross works through that central body and cares for the prisoners in either enemy camp. The International Committee has done a great deal to hold each arm of the Red Cross up to do its duty in accordance with the Geneva convention. It has insisted that chaplains and doctors and nurses captured were not prisoners of war that they should be sent back with the wounded for whom they were caring. When that definite work is done they ceased to be prisoners of war and were to be sent back to the country from whence they came. This the Red Cross has succeeded in bringing about in many cases.

It is also the work of the International Red Cross to see that the food and mail sent to the prisoners reaches them. The records of each man captured or wounded in the enemy's country is transmitted through the International Red Cross to the home people wherever the prisoner or wounded man may be. It has developed into a huge organization, one through which the belligerents are willing to help each other.

As to the relation of the Red Cross to the American Army, the Red Cross considers the American Army as the main reason for its own existence. The Red Cross aids in every way possible so that the army may be enabled to utilize its men. It does that which the army cannot do and has not time to do. The Red Cross representatives in the hospitals look after supplies and care for individual soldiers in a way that any friendly person would care for a friend, in other words, in a way that the doctor or nurse has not the time to do.

All of the Red Cross base hospitals and Red Cross units cease to be Red Cross the moment they go on active duty and become entirely in the army service.

Commissioner Murphy early last summer informed me that it was his desire I should build up as good and scientific an organization as it was possible to do. He formed a research committee. He obtained an appropriation of \$100,000.00 and said we could use as much of this amount without restrictions as in our judgment seemed best. He asked us to decide on what was best to be done. We obtained the cooperation of the Medical Corps of the British Army and of the French Army, and the three Medical Corps have met every month as a research medical society, and the British and French surgeons have given their best experience and ideas in the last three or four years and have placed our men in a position to go on with research and clinical work in medicine and surgery in 1918, otherwise we would have had to work out and struggle over the same problems that the French and British had done before. That cooperation has been of the greatest help and is one of the best things we could have done to solidify the three Medical Corps and give aid to the army and surgeons that needed it. The minor details of this work I shall reserve until I appear before the separate sections of the Society.

As to trench fever, its transmission and origin have been solved. Trench fever is a curious break-bone fever that begins with a sharp shooting temperature. The temperature rises to 103 deg and 104 deg with aches of an intense character in the insertions of the muscles, then the temperature drops down. Again, it goes up four or five days later and takes on the character of a regular recurring fever. It cannot be told except

by blood cultures from the recurrent infectious jaundice of Weil. No organism has been found for it. It cannot be transmitted to animals. We realized that we must ask for volunteers, and a curious thing is that some of the men who worked with General Gorgas in Cuba in connection with yellow fever were with us. General Ireland, who is on the research committee, worked out the line of research in yellow fever in conjunction with General Gorgas, and Colonel McCoy, of the staff, was in Cuba a young lieutenant, an aide to General Wood. General Ireland took the necessary orders, asked for volunteers, and of the 100 men who offered to go, there were 60 volunteers accepted. Within six weeks from that time through experimental work it was found out that trench fever was transmitted by the bites of body lice. They worked with the body lice in the trenches and worked with perfectly tame and virtuous lice they got from London, whose habits and previous conditions of health were beyond reproach, and the thing was worked out with every possible method of control. Trench fever was the cause in the last year of 10 per cent of some units of the English Army being on the sick list, when they ought to have been in the trenches. No man dies of the fever, but it knocks him out for two or three months. This discovery has solved the question and it saves from 8 to 10 per cent of some units of the active force. Thus the Red Cross has succeeded in doing.

There was a storm of disapproval by the antivivisectionists and Christian Scientists that we had no right to spend the funds of the Red Cross in pursuing such an investigation. I took the position, and Major Murphy backed me up, that we had a moral right to do it and we proceeded to do it, and the Medical Advisory Board of the Red Cross backed us up. It seemed wise to the War Board and the War Council that if we could obtain a special appropriation for this work it would be better than to raise a storm. It did not make any difference as long as we had the money, I would not question it provided they acknowledged we had a moral right to do it. How much did we spend? The original appropriation given was \$166,000.00 of which we have already spent about \$30,000.00. I received a return telegram stating that a certain gentleman had given \$166,000.00 and we were to check it off the books as being from the general appropriation. Research work has thus been provided for by special funds and will go on just the same.

The work there is to do now and for which I have come home and ask your aid is this: we are short of doctors. I have come back for about thirty or fifty doctors to help us. I have been working alone caring for the scientific part, I have been unable for days and weeks to leave Paris because I did not have any one there to

whom I could entrust my work. Dr Burlingame my assistant is doing work that half a dozen men should do, and he is getting tired. During the recent drive we had to take every doctor and send him to the front to help out. There have been Red Cross doctors in one of the hospitals who stayed because they were not ordered back, and they stayed back of the line between the headquarters of the French division and their front line with hospitals near where 105 millimeter guns were in full action. They stayed there and did their work with the aid of one or two nurse aids, and two canteen workers, an old gardener, and two chauffeurs and worked for 28 hours on a stretch when every one belonging to the hospital had left. They stuck it out because they would not leave. They did splendid work and a French consultant told me that they did as good work as any of the men in the army, that they did as good surgical work as any that was being done. In fact he could not express himself in words of praise sufficiently adequate for these men. You may be called upon to do that work if you help me. You may be called upon to do such surgery. There are also administrative duties to perform. There is work to be done in plain administration with Dr Burlingame. You may be sent at any time to go down into some of the smaller districts for the whole of France has been districted. I need men to help the commanders in these districts. I need men for hospitals of the superintendent type. I need X-ray men if I can obtain them. Bacteriologists are wanted. The services to be rendered to the civilian population are great in the way of breaking up epidemics of scarlet fever, diphtheria, mumps and other infectious diseases that break out among the civilian population. I need 15 or 20 men for that work. I do not ask you to volunteer. Those who volunteer will be more than welcome. If you can go and you need your expenses paid, they will be paid. If you need a salary to help you we will gladly give you that which amounts to \$160.00 a month besides your expenses. I shall ask you if you cannot come for an indefinite time to come for eight months and then return home for six months that you may take care of your practice, and then come back again for another eight months or something like that. I shall do everything I see so that a man can come and work with us for so many months and then go back home to look after his practice and then another man to take his place in the meantime so that there will be a constant medical supply for that service.

The service with the civil population is conducted from a center from which a man starts out with a chauffeur and nurse. In Ford, and goes to a certain group of villages and holds

clinics for certain hours on certain days. I need young, vigorous men and older men who have retained their physical vigor. It is emotional, hard trying work over there, and it requires an abundance of courage and plenty of resistance.

You will find the climate of France is one of the meanest you ever worked in. It is a cold, chilly climate that gets into your bones and you do not know why, as the temperature does not seem to be so low.

As I have previously said I am here to beg for volunteers and for those who will help me. I cannot take men from the medical schools, but I can take them during the summer vacation, and I will be glad to have them but they must make up their minds to return in the fall to their work in this country. I do not want men of draft age. I can take men who have been wanting to go into the Medical Reserve Corps and who for one reason or another have been ruled out or men between 55 and 60 who retain their active physical vigor who can stand the hard work which they will have to do over there.

I have said enough and this is a report of the work I have done instead of the work you gave me to do but which has been so ably done by Dr Husted that the Society has increased in its influence and usefulness.

## INTESTINAL OBSTRUCTION

By HARVEY P JACK MD FACS,  
HORVELL, N Y

**S**URGEONS can now find little fault about the delay of operation in acute appendicitis.

In my experience the general practitioner is ever increasingly alive to the necessity of prompt surgical treatment in these cases. Criminal procrastination is here more and more rare. On the contrary, early operation is insisted upon.

That this ideal state of affairs is not present in acute mechanical obstruction, a rapidly fatal disease with an alarming mortality, if not promptly operated, has been my experience, in fact, the quick succession in which I was asked to operate upon two cases of obstruction due to hernia-embolus both too far advanced to recover.

My excuse for the presentation of this paper

In both cases a hernia, in one two herniae, inguinal, had long been present. The hernia became strangulated and were supposedly reduced, and were reduced so far as the finger in the canal could determine, but vomiting and pain continued in one until it became fecal, in character and in the other until constant hiccough developed.

In both at operation it was found that the hernia and sac had been reduced en bloc and a knuckle of gut was strangulated at, the, and

Read at the Annual Meeting of the Sixth District Branch of the Medical Society of the State of New York at Watkins October 9, 1917.

by the neck of the sac. The constricting neck was cut and the gut liberated and although the operation lasted but a few minutes the patient went into collapse and died within 24 hours. The sac in this case was brought through the rectus muscle and sutured to the fascia, after the method of Babcock, thus closing the pocket.

In the other case the knuckle of gut was freed by dilatation of the neck of the sac and, as the patient was coming out from the anæsthesia, a double repair of the hernia was rapidly done.

I have had in all, three of these cases, with one recovery and two deaths, the one that recovered having been obstructed for 18 hours, the other two from 60 to 72 hours. In the last few years I have operated upon nine cases of mechanical ileus with three deaths.

*Case No. 1*—Case 1 was due to a large gall stone causing complete obstruction, associated with fecal vomiting, obstructed 16 hours, recovery.

*Case No. 2*—Case 2 was due to a band of adhesions in ileo-caecal region obstructed 72 hours, band freed, enterostomy, death in 48 hours.

*Case No. 3*—Case 3 was due to a band of adhesions, post-operative, for suppurative appendicitis done by myself one year before. In this case at first operation the appendix had perforated into the bladder and feces constantly passed with the urine. The appendix was removed and hole in the bladder closed. One year afterwards the family physician diagnosed an acute obstruction, obstructed 10 hours. At operation a band tightly tied down the ileum near ileo-caecal valve, recovery.

*Case No. 4*—Hernia-enbloc, reported above.

*Case No. 5*—Hernia-enbloc.

*Case No. 6*—This case had an old hernia and a section of gut was found, at operation, closed by a band of adhesions, the formation of which was believed to have been caused by the bruising of an ill-fitting truss, band severed, obstructed 24 hours, recovery. Fecal vomiting was present in this case.

*Case No. 7*—Case 7 obstructed 12 hours, fecal vomiting due to extensive adhesions in gall-bladder, hernia was also present, adhesions severed. Stormy convalescence, hernia repaired.

*Case No. 8*—Hernia-enbloc, fecal odor to breath, obstructed 16 hours, recovery.

*Case No. 9*—Femoral hernia in a man of 78 years, fecal vomiting, obstructed 8 hours, recovery.

Those cases teach the usual lesson: early operation means recovery. Procrastination spells

death. Hernia-enbloc does not seem to be known as it should be as a cause of obstruction.

In Deaver and Ross' study of 276 cases 56 per cent were due to hernial obstructions, and, commenting on this state of affairs, Murphy says (Year Book, 1916, page 404) "The mortality in acute intestinal obstruction has not improved in a third of a century." Why, S. Deaver and Ross clearly show that it is because of the procrastination before operating, *the conservative treatment*, meaning the failure to make a correct diagnosis, with a cutting positiveness back of it. Let us hope for a better future, but hope is scarcely possible after a third of a century of failure. It is still more appalling when we note that 56 per cent of the above cases were hernial strangulations, *i.e.*, external intestinal obstruction."

The laity often diagnose appendicitis tentatively. Must we wait for improvement in the death rate from intestinal obstruction until knowledge of this acute, dangerous malady becomes general, and operation is insisted upon by the public? It would almost seem so.

*Diagnosis*—The diagnosis of acute mechanical obstruction of the bowels is usually easy. As Collins remarks (Year Book, 1915, page 406), "The diagnosis does not require a laboratory or any expensive instruments." A carefully taken history and close examination will nearly always demonstrate that here is an obstruction and that is sufficient. If a diagnosis cannot be made at the first visit, the physician should see his patient at frequent intervals, until it can be made. It is not sufficient to prescribe physic and morphine, and then not see his patient until the next day. And yet this is very frequently done. The last line under duration of obstruction tells the whole story.

*Duration less than 12 hours, recoveries nine. No mortality.* Let us run briefly over the symptoms. Of first importance is the history. Has the patient undergone an operation? Has the patient had an attack of appendicitis or peritonitis? If so which, or were both present? If the peritonitis was not due to appendicitis was it possibly or probably due to tubal disease or gallstone disease? Has the patient a hernia or herniæ? If so, has it been recently or ever strangulated? If a truss is worn has it caused pain? Has the patient been injured over the abdomen? Has the patient had attacks of this kind before, or has there been a gradually increasing obstipation, to the point of complete obstruction? In the latter event, cancer, if in the cancer age, would be considered, or, possibly a foreign body which partially obstructs and then moves along from place to place making for itself a diverticula. Has the patient vomited?

Did vomiting occur soon or late after the pain came on? Is it fecal?

**Physical Examination**—Has the breath a fecal odor? Are there hernial openings present? Is there anything in their crevices? Is borborygmi present? Does the stethoscope reveal violent peristalsis? As Murphy remarks the stethoscope will reveal more here than it ever did in the lungs.

Is vomiting becoming more frequent or diminishing in frequency? Is visible and palpable peristalsis present? It is never present in any other condition (French, page 129). Is fecal vomiting present? It is pathognomonic of mechanical obstruction? Has the patient taken physic? It not it should never be given. As French says: A rectal examination should always be made. In organic intestinal obstruction the rectum is empty.

If it contains feces there may be obstruction due to faeces, but it is exceedingly rare, for this to produce symptoms at all comparable in severity with those due to acute obstruction. With this exception the presence of any quantity of feces would show there was no intestinal obstruction, further, says French, In doubtful cases two enemata should be given at an interval of an hour. The first generally brings away a certain amount of feces even if the obstruction be complete. The second results in the passage only of feces or flatus if there is no complete, or if, the obstruction is high up in the small intestine.

If there is complete obstruction the second enema is retained or escapes with abnormally small force. Shock and collapse are more marked the higher the obstruction. They are also much greater when obstruction is accompanied by strangulation owing to bands or hernia than when strangulation is absent as with gall stones or cancer (French page 131 Index of Differential Diagnosis). When all these historical and physical questions have been asked and their answers returned if interpreted in the light of a clear knowledge of physiology and pathology, no difficulty should usually be present in showing that acute intestinal obstruction is or, is not present.

As to the question of treatment, how much, or what should be done depends upon how early, or how late the surgeon sees the case upon how much useless, harmful conservative treatment has been practiced. Here is no place for a waiting game, for it means a game with death, in which the cards are marked against your surgical skill and experience. If the case is seen early a rapid and careful search of the inguinal rings, ilio cecocolic region and foramen of Winslow or of the region of a previous operation or sites of possible intiction, like the tube, of the gall bladder or of sections of gut where cancer usually occurs will in the vast majority of cases

reveal the band, the twist, the kink or the knuckle of gut, strangulated in a herniac opening and, whatever operation is indicated may be performed with an excellent prospect of success.

But the diagnostic millennium is not here. Can we do more for the late cases and high obstructions with their terrific mortality, than we have been able to do in the past?

I think it is the common observation of most surgeons of experience that they have seen cases presenting a day or two after a severe drainage operation with removal of the appendix, alarming symptoms of obstruction. When, behold a fecal fistula breaks through and the serious symptoms clear like magic, and the case goes on to recovery. Or the surgeon sees an acute obstruction that has come to him late like the case of hernia-embolus mentioned above, and yet sees in fair condition. The obstruction is relieved in a few minutes, the patient returned to bed, eliminated and stimulated by all the means at our command and yet, goes promptly into collapse and dies (Murphy page 414 Kelly Noble).

Have we accepted as widely as we should this cue from nature? Whipple has shown that poison liberated from the obstructed, into the unobstructed intestine that kills the patient in these late, and high obstructions, is a primary protease. If the patient is operated within 12 hours it does not kill. All of Collin's cases recovered.

Sir Berkley Monaghan has designed a tube for use in emptying the intestine of this poison and states that if this is not done the patient will succumb. Shoemaker (Surgery Gynecology & Obstetrics, Aug, p 217), (Radical Treatment of Intestine Obstruction), advocates a radical procedure. He says "After all gangrenous and obstructed intestine has been resected an end to side anastomosis of the distal fragment is made about 6 inches from the end of the proximal fragment. The proximal fragment is drawn through the abdominal wall by means of a stab wound as far away from the original incision as possible. A drainage tube three-eighths inches in diameter is tied in the gut and carried over the bed into a bottle. The original incision is closed. Fecal contamination of the skin will not begin until about the sixth day when the portion of intestine tied to the tube above the skin will separate, at a level of the skin at the stab wound.

Feces will not flow around the tube. At this time under nitrous oxide anesthesia the bowel should be drawn further through the stab wound, crushed, tied, cauterized, the stump invaginated similar to the method used in treating the appendix. The stump will now slip back into the abdominal cavity of its own accord. It is safer to tie the stump to the peritoneum with a single stitch. If leakage occurs it will have

easy egress. A Murphy button is used in order to insure a patulous opening.

As Charles N. Dowd remarks (*Annals of Surgery*, Jan., 1917, page 100) "Intestinal resection is to be avoided whenever possible, and, he gives a mortality of 38 to 27%." In the same paper page 98 he says "Nothing in surgery is more dramatic than the improvement which comes from fortunate enterostomy. A patient who is almost moribund before the procedure, is, a few hours later, comfortable, bright, and hungry."

The change seems little short of miraculous. But although, the immediate improvement is so marked the patient is not yet well. The original cause of the obstruction is yet to be dealt with, and the enterostomy opening is yet to be closed. The obstruction is frequently temporary. If there are many angulations in a moderately inflamed intestine the obstruction may be sufficient to produce stasis. Such obstruction, however, ceases if the distension and if the inflammation subside.

These two papers both published this year show the tendency to do an enterostomy, or, otherwise provide for drainage of the obstructed loop, especially in all late strangulated cases, and high obstructions. Dowd has designed and used an obturator to shut off the faecal discharge from the skin where, in the fistula of the small intestine, that do not close spontaneously, a digestion of the skin accompanied by marked prostration and emaciation of the patient, results.

It is a very simple, and easily made device, which he has used with excellent results. It can now be obtained of instrument makers, I believe. For a description of the instrument I refer you to Dr. Dowd's paper (*Annals of Surgery*, Jan., 1917). Since 1913 C. H. Mayo Mayo Clinic papers page 277 has been an advocate of enterostomy, in acute ileus where he states "The procedure is a simple one of itself and life saving in a large proportion of cases when the conditions are recognized and the procedure applied before it is too late. If the patients survive 24 hours following, insertion of the tube, most of them recover. The difficulty, whatever it may be, passes off and, but a few of them require further operative procedure, than the enterostomy. However, should it be necessary, their improved condition, will permit it within a short time."

C. H. Mayo, in this paper, is referring to post-operative acute ileus. If enterostomy were applied as a routine procedure in all late cases and in all cases, in which the obstructive band could not be found without evisceration and extensive manipulation, and the cases of acute mechanical obstruction whether the band

or km is found or not, accompanied, as they are by grave toxemia, and collapse would it not prove a Godsend to these patients? Would not this play for time be good trench warfare? The first trench dug and protected, we have time to organize for the next assault.

The objections urged against enterostomy are, of course, the danger of infection and the possibility that one may be later compelled to do a resection. In view of the desperate condition of these patients, the objections have about as much sense back of them, as an objection to trench warfare would have should one say, "You must not try to take this first trench now, someone may get hurt and later the enemy may get tired and leave." When you know, or should know, that he is prepared to stay, and to kill you, at the first opportunity.

However, we have several very safe ways in which to do an enterostomy. Of these I will mention only one. I refer to the method used by Dr. Johnson of Batavia, N. Y., and original with him.

He makes a small incision into the distended gut, and, into this, places one half of a Murphy button, the other half of the button is inserted into the end of a good sized three-eighth inch or one-half inch rubber tube exactly, as if the tube was an intestine about to be anastomosed, end to end. The halves of the button are pressed together, you have a non-leakable enterostomy, through which, you may drain, or feed, as desired. You can clamp the tube, from time, to time, to ascertain if the obstruction has been relieved. If not, the first point has been won, and, you have in a few days in which, you may feed or drain, or both, as you see fit. At the end of that time a proper operation can be done on a wonderfully improved patient.

Are we arriving at a two stage operation as a routine for all late cases, as surely as we have arrived at the two stage prostatectomy? I believe we are, and that, even in the early cases, in which shock and collapse are pronounced, Dr. Johnson's operation will prove life saving.

I cannot close this subject without urging, also, the great benefit to be derived from stomach lavage, immediately before, and after operation, if vomiting continues. The conclusions to be drawn from this summary of the subject are first, the early diagnosis of these cases of acute mechanical ileus is our only hope of causing a marked decrease in the death rate. The importance of this must be urged and taught, until every physician and surgeon becomes thoroughly alive to the necessity of early recognition of this condition. Second that in all late cases, enterostomy must constitute a part of our procedure whether the obstruction, band, or kink, is found or not, if the death rate is to improve.

# Medical Society of the State of New York

## ANNUAL REPORTS

### 1917

#### REPORT OF THE SECRETARY

##### To the House of Delegates

In compliance with Section 3 Chapter VI, of the By-Laws the Secretary submits the following report for the year ending December 31, 1917

Membership December 31, 1916	7,994
New Members, 1917	548
Reinstated Members, 1917	229
	<hr/> 8,771
Deaths	118
Resignations	25
Expelled	1
	<hr/> 144

8,627

Dropped for non-payment of dues December 31 1917

418

8,209

Elected after October 1, 1917, and credited to 1918

130

Membership January 1, 1918	8,339
" " " 1917	8,287
" " " 1916	7,940
" " " 1915	7,239
" " " 1914	7,239
" " " 1913	6,964

On January 21 1907 the membership of the State Society was 5857. Today there is an increase of 2482. During these eleven years there have been 1057 deaths, 516 resignations and 19 expulsions a total of 1592. Each year a certain number are dropped for non payment of dues but before the close of the next year about two thirds of these pay their dues and are reinstated. The loss from this source from 1907 to date has only been 1684, an average of 153 a year.

During these eleven years 6,127 new members have been admitted and the membership of the Society is increasing more rapidly than are the accession to the professions.

The Honor List of Counties whose membership for 1917 is fully paid up is as follows: Chenango, Columbia, Essex, Jefferson, Lewis, Oneida, Onondaga, Ontario, Oswego, Queens-Nassau, Rensselaer, Schoharie, Tompkins, Washington, Yates.

#### Dr THOMAS H. HALSTED

Upon the departure for France of Dr Lambert, President of the State Society, Dr Halsted, the first Vice-President, became Acting President and served until Dr Lambert's return to the state in May. As the member of the Society who best knows the conscientious work Dr Halsted has done in that position, I should feel remiss were I not to inform the Society of his work and devotion to its welfare. While reticent and retiring and unwilling to thrust himself forward, he has been ready to respond to every call and perform every duty devolving upon the highest officer. He is President of the American Laryngological Association. His duties in that office added to the duties of Acting President of this Society, which so suddenly devolved upon him, have made a most laborious year, but I have never heard him complain or known him to shirk one of them. He has ever been ready to assume any duty that came.

I deem it a duty and a pleasure to place these facts before the membership.

Respectfully submitted,

FLOYD M. CRANDALL,

Secretary

April 1, 1918

## REPORT OF THE COUNCIL

*To the House of Delegates*

The Council of the Medical Society of the State of New York begs leave to present the following report

During the past year meetings have been held on the following dates

March 3, 1917, in Ithaca Minutes will be found in the *New York State Journal of Medicine*, Volume 17, No 4, Page 190

April 26, 1917, in Utica Minutes will be found in the *New York State Journal of Medicine*, Volume 17, No 5, Page 257

May 31, 1917, in New York City Minutes will be found in the *New York State Journal of Medicine*, Volume 17, No 7, Page 343

December 8, 1917, in New York City Minutes will be found in the *New York State Journal of Medicine*, Volume 18, No 1, Page 837

The Council in compliance with the recommendation of the House of Delegates "that the Council appoint a Sub-Committee on Counsel" at a meeting held on May 31 appointed the following Committee William Mortimer Brown, Chairman Richard Giles, Frank Van Fleet

The following is a report of this Committee presented to the Council at a meeting held on December 8th

*To the Council of the Medical Society of the State of New York*

The Special Committee on Counsel begs leave to present the following report

On August 6th the Committee met and after considerable discussion of the contract under which Mr Lewis is working for the Society and the intent of the resolution of the House of Delegates, Dr Van Fleet was instructed to confer with Mr Lewis and learn what steps had been taken to carry out the purpose of the action of the House of Delegates and the Council

On December 7th another meeting of the Committee was held and Mr Lewis was requested to appear before us and inform the Committee what had been done in the matter of obtaining an assistant

Mr Lewis stated that he did not feel bound by the resolution of the Council to employ any assistance in his work but nevertheless, in deference to the sentiment expressed in the report of the "Committee on Counsel" to the House of Delegates at its meeting in Utica, he had tried to obtain an assistant and has at different times since that meeting employed four different lawyers to assist him in the work, but has been unable to get anyone to remain at the work longer than twenty days, and that at the

present time he has no additional help in his work, for the State Society

Signed, William M Brown, Chairman

Frank Van Fleet

Respectfully submitted,

FLOYD M CRANDALL,  
Secretary

April 1, 1918

## REPORT OF THE COMMITTEE ON PUBLICATION APPOINTED BY THE COUNCIL

*To the House of Delegates*

The Council at the meeting held in Utica, April 26, 1917, appointed the following Committee on Publication for the ensuing year Drs Alexander Lyle, John C MacEvitt, Martin B Tinker, Samuel W S Toms, and Frank Van Fleet At the same meeting Dr MacEvitt was unanimously elected editor

At the first meeting, held June 2nd Dr S W S Toms was appointed Chairman

The resignation of Dr Lyle on account of ill health, was accepted by the Council at its meeting on December 8, 1917, and Dr Edward Livingston Hunt of New York City was appointed to fill the vacancy

## JOURNAL

The JOURNAL during 1917 has been issued regularly each month, the edition varying from 9,150 to 9,300 The cost to the Society was \$4,820 10, an increase of \$690 30 This slight increase was accomplished in spite of an increase in the cost of paper and labor of \$2,000 over the previous year, through the very satisfactory receipts obtained from advertisements, amounting to \$1,624 40 more than in 1916 which, together with an increase of \$57 39 for sales, made an increase in revenue for the JOURNAL of \$1,681 79

In addition to this all moneys were collected with the exception of \$69 75, which it seemed advisable to charge off as doubtful debts, as every effort had been made to collect it without success

## DIRECTORIAL

The Directory was almost a month late in publication owing first to the printers' strike, which delayed the work at least three weeks, and also to the fact that the services of Boyd's City Dispatch, who had the delivery of the Directory, were commandeered by the Government for the delivery of War Savings Stamps just at the time when the Directories were sent to them, which added an additional ten days more in having the book reach the members

The cost to the Society of publication of the Directory for 1917 was \$6 352 81, an increase of \$1,227 over 1916. More than two-thirds of this increase was due to the increase in the price of labor and paper and also to a slight increase in all expenses, including that of commissions paid for obtaining advertisements, as a number of the advertisers of the previous year including those on both covers, dropped out, necessitating obtaining over \$1,000 worth of new advertisements with the usual increase in the amount of commissions for new advertisements over renewals. In addition to this must also be taken into consideration the fact that it was necessary to publish 300 more Directories than last year, owing to the increase in membership of the State Society.

To offset this increase in publication there was no increase in revenue with the exception of \$41 for advertisements and \$9 for sales, a total of \$50.

Respectfully submitted,

S W S TOUS, *Chairman*

April 1, 1918

# REPORT OF THE COMMITTEE ON ARRANGEMENTS

*To the House of Delegates*

The Committee on Arrangements hereby presents a preliminary and partial report.

The Ten Eyck Hotel has been chosen as headquarters for the Annual Meeting of the Medical Society of the State of New York.

The Delegates will meet in Chancellor's Hall, State Education Building, at 3 P M, May 20, 1918, also for the evening session on the same day and again for the early morning session on Tuesday May 21st.

The General Meeting will be opened by the President, Alexander Lambert, M D, at 11 A M Tuesday morning, May 21st in Chancellor's Hall.

The Hon Charles S Whitman, Governor of the State of New York and the Hon James R Watt, Mayor of the City of Albany, will address us.

An oration on "The Psychology of the War" will be delivered by the Hon James M Beck, LL D, New York City.

All Sections will meet in the County Court House.

Medicine, Bar Association Room  
Pediatrics Grand Army of the Republic Room  
Public Health District Attorney's Library  
Gynecology and Obstetrics, Supreme Court Room  
Eye Ear, Nose, and Throat Supervisor's Room  
Surgerv, Special Term Room

The Registration Booth will be in the Court House.

Tuesday evening, May 21st, a smoker will be given at the Albany Club, and Wednesday evening, May 22nd, there will be a dinner at the Ten Eyck Hotel.

The Committee on Arrangements for the Entertainment of the Women, under the chairmanship of Mrs Edgar A Vander Veer, have arranged the following program.

Tuesday morning, Red Cross County Court House.

Tuesday afternoon, auto ride to Pittsfield, Mass, supper and return.

Wednesday morning Red Cross, County Court House, followed by a luncheon at the Country Club and an afternoon drive to the Helderberg Mountains.

Wednesday evening, dinner at the Ten Eyck Hotel.

A list of hotels with rates has already appeared in the preliminary program and will be published in the booklet.

The Commercial Exhibits will be shown in the County Court House. This, you will notice, brings all of the active Society work in one building.

Respectfully submitted,

ARTHUR J BDELL, *Chairman*

April 1, 1918

# REPORT OF THE COMMITTEE ON SCIENTIFIC WORK

*To the House of Delegates*

As acting Chairman in the absence in France of Dr Samuel Lloyd I have the honor to report that the Committee on Scientific Work has given careful consideration to the preparation of the program for the annual meeting. In spite of the unusual conditions existing and the absence of many of the active workers of the Society which made the work of the Committee somewhat difficult it is our feeling that the program this year in every way compares favorably with those of previous years and will, we trust meet the approval of the members of the Society. The acting Chairman desires to express the pleasure it has given him to once more be associated in the active work of this Committee and to bear witness to the wisdom of the radical change made five years ago by the inauguration of the Section form of meeting.

Respectfully submitted

THOMAS J HARRIS  
*Acting Chairman*

April 1, 1918

## CHAIRMAN OF COMMITTEE ON PUBLIC HEALTH AND MEDICAL EDUCATION

### *To the House of Delegates*

The Committee on Public Health and Medical Education would respectfully report, that absence of some of its members at the front and the demands upon time and energy due to war conditions have prevented some activities, which would otherwise have been undertaken.

Attention is called to the fact, that, on account of the large number of younger physicians now in the army, hospitals and dispensaries are suffering for want of men, especially to serve in the out-patient clinics.

The older men should consider it their duty to volunteer their services for this work, if the sick poor are to be cared for properly during the period of the war.

It is worthy of notice, that the Surgeon General of the Army, in orders issued April 6th, 1918, M E R C F C Waite, Capt San Corps, N A, has requested all medical schools to drop any students who fail to show a high degree of fitness in the study of medicine. It seems to be the intention of the Government to continue men in the study of medicine, but to insist upon keeping the standard high in medical schools, that graduates entering the army may successfully meet the demands of the service. The effect of this will be to either stimulate the weaker schools to a greater efficiency, or to cause them to close their doors.

The probing of the Department of Health in New York has interested the Committee. The debate seems to be, amongst other things, on the question as to whether it is more economical for the city to maintain an active propaganda of education for the public on health and sanitary measures, or leave it for the public mind to evolve its own formula for maintaining its standards on these lines. The history of disease, insofar as the lowering of the mortality rate and the successful passage from infancy to adult life have been modified by the application of the results of experimental medicine to public conduct is so clear, that it leaves no doubt as to the economic wisdom of adopting such measures for the education of the average mind, as will place it in a position to grasp the fundamental principles governing the maintenance of health in large and crowded cities.

It is not only the duty, but it should be the glory of the metropolitan government to maintain an active campaign against the inroads of disease, and nothing could be better calculated to accomplish this than a Public Health Educa-

tion Bureau. It is a fact, only too well known, that disease and crime go hand-in-hand where people are sound in body they are more apt to be sound in mind,—the temptation to violate the criminal code is lessened, as the health of the community is sound.

That the most certain and economical method of securing prophylaxis of disease is through popular object lessons and demonstrations is scarcely debatable.

No human organization is perfect. It is quite possible to pick flaws in any form of administrative work. But the total efficiency and usefulness of such work must be the governing factors in estimating its economic justification. That the Public Health Education Bureau has withstood this crucial test is evidenced by the fact, that many protests against its abolition have been made by prominent men in the United States and Canada and that the Federal Government has threatened to intervene, if the municipal authorities persist in doing so.

Acting upon this belief, the letter herewith appended was sent to the Chairman of the Public Service Commission during a hearing before the Commission on the matter.

April 25, 1918

James E McBride, Esq., Chairman,  
Civil Service Commission of Greater New York  
DEAR SIR

The Committee on Public Health and Medical Education of the Medical Society of the State of New York desires to add its protest to the many others already made against the abolition of the Public Health Education Bureau in the city of New York, which has, in their opinion, been not only of incalculable value to the City of New York, in bringing to the public a better understanding of the laws of health and sanitation but a national influence which has been felt throughout the cities of the United States and Canada. The "ounce of prevention" has in this case been worth more, many times more than "the pound of cure." It is regrettable to feel that there could exist in the minds of any persons the slightest doubt as to the wisdom of keeping the public constantly informed, through reliable channels, of the practical results and application of scientific research looking to the protection of the public health.

The work of the bureau under consideration is or should be known by every physician in the Greater New York as of far reaching influence amongst a class of the community impossible to reach excepting by just the type of propaganda which the bureau has so faithfully and, as we see it, judiciously spread abroad.

We earnestly hope that, after all the testimony is in, the Civil Service Commissioner and His Honor The Mayor will see fit to continue the Public Health Education Bureau, with its present incumbents of office.

Respectfully submitted,

JOSEPH M VAN COTT, Chairman,  
Committee on Public Health and Medical Education

April 1, 1918

## REPORT OF THE TREASURER

## To the House of Delegates

The Treasurer desires to present to the Society a few details in regard to the financial condition of the treasury

A comparison of the funds in possession of the Society at the end of each year will show that although some of the years show a deficit, that taking the entire amount received and expended from 1906 to 1917, there has been an excess of income during these years of \$5,096 94, as shown by the following table

Bank Balances December 31st	Excess of Income	Deficit
1906 \$5,328 19	\$3,234 29	
1907 4,788 88		\$1,287 37
1908 5,300 30	642 46	
1909 9,426 79	3,311 63	
1910 10,096 73		479 22
1911 10,608 33	850 85	
1912 8,617 78		1,306 09
1913 9,448 08	879 40	
1914 9,939 60		759 15
1915 11,381 89	1 153 21	
1916 12,901 44	1,734 22	
1917 9,063 54		2 877 29
	<u>\$11 806 06</u>	<u>\$6 709 12</u>

The paid up membership of the Society at the end of the year, although not as satisfactory as in 1916 there being 418 members dropped instead of 291, was still remarkably good when one considers the unusual conditions which existed. Over 160 of these dropped members have already paid their back dues and been reinstated and others will pay in the near future.

The JOURNAL for 1917 shows an increase in the receipts from advertisements of \$1,624 40 over that received in 1916. This enabled the Society to publish the JOURNAL at the slightly increased cost of 690 30 in spite of the fact that the price of paper had almost doubled and that it was necessary to increase the edition 200 copies per month or 2,400 per year, in order to supply the new members.

The increase in the cost of the Directory to the Society is a little more being \$1,277 00 over that of last year. This can be accounted for by the increase in the cost of paper and labor and also by the necessity of publishing 300 more directories than in 1916. To offset this, there was an increase of only \$50 00 in the receipts from advertisements and sales owing to the loss of many of the old advertisers, so that although a number of new ones were procured they did not more than make up for

those who had dropped out. This increase would have been larger if the Committee on Publication had not been foresighted enough to buy the paper in the early part of the year, when the price was several hundred dollars lower than in the early summer.

In studying the figures of this year's report, members must take into consideration that the deficit of \$2 877 00

can mostly be accounted for by the carrying out of the recommendation of the House of Delegates "that the Council increase the salary of the Council 25 per cent" or from \$7,200 00 to \$9,000 00 per year an increase for eight months of \$1 133 33 and also to the expense incurred in carrying out the resolution of the House of Delegates "instructing the Secretary to send to every physician in the state an agreement turning over one third of all fees collected from patients of physicians in the service of their country." The cost of this amounting to 879 97

A total for these two items of \$2,313 30

The expenses this year will be even higher than last, as the Council will receive \$600 00 more owing to last year's increase not having taken effect until May 1st. There will also be an increase of several hundred dollars in the traveling expenses of the delegates to the meeting of the American Medical Association, an expense which was not incurred last year owing to the meeting being held in New York City.

It is also impossible to depend upon an increase in the receipts of dues from new members, as many of the recent graduates and younger doctors who make up a large percentage of our new members, are away in the service of their country.

Respectfully submitted

FRANK VAN FLEET,  
Treasurer

April 1, 1918

## REPORT OF THE TREASURER

FRANK VAN FLEET, *Treasurer* In Account with THE MEDICAL SOCIETY OF THE STATE OF NEW YORK  
Dr CrCASH RECEIPTS YEAR ENDED DECEMBER  
31, 1917

To Balance, Jan 1	\$12,901 44
" Directory, 1915	\$107 50
" Directory, 1916	610 17
" Directory, 1917	2,317 10
" Clerical Work	158 96
" Interest on Deposits	443 44
" Interest on Bonds	90 00
" Sundry Receipts	176 06
" Advertising	6,760 52
" Subscriptions and Sales	340 09
" Annual Dues, 1915	75 00
" Annual Dues, 1916	633 00
" Annual Dues, 1917	23,888 50
" Annual Dues, 1918	543 00
" Annual Dues, 1919	3 00
" Arrears	78 00
	<u>36,224 34</u>

\$49,125 78

CASH PAYMENTS, YEAR ENDED DECEMBER  
31, 1917

By Traveling Expenses	\$595 62
" Accountant	200 00
" Carfares	16 10
" Express	20 72
" Treasurer's Bond	12 50
" Exchange on Checks	4 00
" Sundry Cash Disbursements	383 61
" Telephone	189 80
" Stationery and Printing	466 66
" Postage	265 95
" Rent	900 00
" Insurance	5 70
" Committee on Legislation	678 56
" Legal Expense	8,400 00
" 1916 Directory	150 17
" 1917 Directory	9,748 41
" Journal Expense	221 13
" Journal Salaries	1,503 89
" Journal Commission	1,541 51
" Journal Publication	9,482 57
" District Branches	415 73
" Salaries	2,453 96
" Annual Meeting	1,755 28
" Secretary	500 00
" Interest on Received Bonds Deposited	90 00
" Committee on Medical Re- search	28 00
" Committee on Medical Eco- nomics	52 37
	<u>\$40,062 24</u>
" Balance in Guaranty Trust Co General Account	8,598 07
" Com on Medical Research	465 47
	<u>9,063 54</u>

\$49,125 78

## ANNUAL DUES, 1917

County	Amt Paid	County	Amt Paid
Albany	\$510 00	Oneida	\$543 00
Allgany	105 00	Onondaga	645 00
Bronx	843 00	Ontario	234 00
Broome	261 00	Orange	288 00
Cattaraugus	138 00	Orleans	72 00
Cayuga	201 00	Oswego	168 00
Chautauqua	300 00	Otsego	135 00
Chemung	153 00	Queens-Nassau	486 00
Chenango	120 00	Rensselaer	285 00
Clinton	138 00	Richmond	165 00
Columbia	108 00	Rockland	90 00
Cortland	93 00	St Lawrence	219 00
Delaware	84 00	Saratoga	165 00
Dutchess-Putnam	324 00	Schenectady	321 00
Erie	1,962 00	Schoharie	57 00
Essex	72 00	Schuyler	24 00
Franklin	144 00	Seneca	84 00
Fulton	120 00	Steuben	249 00
Genesec	105 00	Suffolk	339 00
Greene	63 00	Sullivan	54 00
Herkimer	162 00	Tioga	60 00
Jefferson	216 00	Tompkins	189 00
Kings	2,535 00	Ulster	174 00
Lewis	48 00	Warren	96 00
Livingston	129 00	Washington	114 00
Madison	87 00	Wayne	114 00
Monroe	972 00	Westchester	774 00
Montgomery	159 00	Wyoming	105 00
New York	8,085 00	Yates	54 00
Niagara	222 00		
			<u>\$24,762 00</u>

## ADVANCE DUES, 1918

County	Amt Paid	County	Amt Paid
Bronx	\$51 00	Onondaga	\$18 00
Broome	3 00	Ontario	3 00
Cattaraugus	42 00	Orange	9 00
Cortland	12 00	Oswego	6 00
Chenango	87 00	Queens-Nassau	15 00
Dutchess-Putnam	6 00	Richmond	3 00
Eric	60 00	Westchester	15 00
Essex	3 00		
Franklin	54 00		<u>\$546 00</u>
Kings	48 00		
Monroe	6 00		
New York	105 00		

## DIRECTORY ACCOUNT

Expenditures	
Postage	\$380 00
Stationery and Printing	178 75
Delivery	583 60
County Clerk's Fees	8 55
Salaries	\$2,119 32
Commission	524 75
	<u>2,644 07</u>
Printing and Binding Directory	5,950 94
	<u>\$9,745 91</u>
Income	
Advertisements	\$2,164 10
Sales	1,229 00
	<u>3,393 10</u>
Cost of Directory	<u>\$6,352 81</u>

Dr	REPORT OF THE TREASURER				Cr
JOURNAL ACCOUNT YEAR ENDED DECEMBER 31 1917					
Income			Expenditures		
Advertisements	\$7 846 39		Publication	\$9 482 57	
Subscriptions and Sales	340 09		Expenses	204 98	
Doubtful Debts Collected	13 00		Salaries	\$1 503 89	
		\$8 199 48	Commissions	1 541 71	
Cost of Journal		\$4 820 10			3 045 40
			Discount		216 88
			Doubtful Debts charged off		69 75
		\$13 019 58			\$13 019 58

## BALANCE SHEET, DECEMBER 31 1917

<i>Assets</i>		<i>Liabilities</i>	
Cash Bank	\$9063 54	Annual Dues 1918 and 1919	\$46 00
Petty	64	Committee on Medical Research	465 47
	\$9064 18	Accounts Payable	51 00
Accounts Receivable	346 24	Lucien Howe Prize	
Furniture and Fixtures	\$376 10	Fund	\$2190 95
Directory Catalogue	250 00	Merritt H Cash Prize	1075 47
	626 10		3266 42
Directory 1917	1075 00	Surplus Jan 1 1917	\$12926 34
Union Dime Savings Institution		Loss, 1917	2877 29
Lucien Howe	\$440 95		
Union Dime Savings Institution			
Merritt H Cash	325 47		
Title G and T Mtg Cfs	2000 00		
Liberty 3½ per cent Bond	500 00		
	3266 42	Surplus Dec 31, 1917	10049 05
	\$14377 94		\$14377 94

I hereby certify that the above Balance Sheet is correct as shown by the books

A H Wick

Certified Public Accountant  
302 Broadway New York

## INCOME AND EXPENDITURES YEAR ENDING DECEMBER 31 1917

<i>Income</i>		<i>Expenditures</i>	
Arrears of Dues	\$795 00	Expense	\$966 01
Dues 1917	24753 00	Telephone	121 20
Interest on Deposits	443 44	Stationery and Printing	446 66
Clerical Work	156 54	Postage	265 95
Directory 1915	107 50	Rent	900 00
	\$26255 48	Insurance	5 70
		Salaries	2453 96
		Committee on Legislation	678 56
		Legal Expense	8400 00
		Annual Meeting	1627 58
		District Branches	415 73
		Directory 1916	246 17
		Directory 1917	6352 81
		Secretary	500 00
		Committee on Medical Economics	52 37
Excess of Expenditures	\$2877 29	Agreement Expenses	879 97
	\$29132 77	Cost of Journal	4820 10
			\$29132 77

## INCOME AND EXPENDITURES YEAR ENDING DECEMBER 30 1916

<i>Income</i>		<i>Expenditures</i>	
Arrears of Dues	\$840 00	Expense	\$1326 21
Dues 1916	24240 00	Telephone	133 57
Interest on Deposits	431 43	Stationery and Printing	289 51
Clerical Work	168 16	Postage	154 85
Directory 1912	30 00	Rent	900 00
Directory 1913	51 00	Insurance	5 70
Directory 1914	35 00	Salaries	2080 10
Directory 1915	402 29	Committee on Legislation	556 43
		Legal Expense	6966 67
		Annual Meeting	1597 29
		District Branches	488 42
		1916 Directory	5125 81
		Secretary	500 00
		Committee on Medical Economics	209 30
		Cost of Journal	4129 80
			\$24463 66
		Excess of Income	\$1734 22
	\$26197 88		\$26197 88

## REPORT OF THE COMMITTEE ON LEGISLATION

*To the House of Delegates*

The bills introduced into the Legislature during the past session affecting the medical profession are in very little wise different from that of preceding years. They may be grouped as follows:

- (a) Public Health Measures
- (b) Police Measures
- (c) Sociological Measures
- (d) Educational Measures
- (e) Measures affecting the statute as to the practice of medicine

In Group (a) the only measures of general importance were two bills for the control of venereal diseases which were introduced. It is stated, as war measures at the request of the Surgeon General of the United States. One instituting a new Bureau in the Department of Health for the suppressing and curing of venereal diseases and the other for the purpose of securing the control of venereal diseases among the vagrants and prostitutes.

In Group (b) lies the bill introduced by the Committee of the Legislature for the investigation of the use of habit forming drugs. This act lessens very greatly the burden placed upon physicians in regard to prescriptions and distribution of drugs but has three disadvantages,—first, that of requiring an annual registration fee of all physicians; second, the institution of a separate bureau of drug control, the head of which need not be a physician or pharmacist, and who is appointed by the Governor, with the consent of the Senate for a term of six years, thus placing the whole narcotic situation practically in the field of politics; third, the bill removes from the class of privileged communications all those made by patient to physician as concerns the enforcement of the Act, both as to Statute and any additional regulations which may subsequently be promulgated by the Commissioner. While a request was made for a hearing upon this bill before its passage, no hearing was granted by the Committee of the Senate having charge of the measure, but a hearing has been granted before the Governor which will take place on April 24th.

Under Group (c) will fall the Senate bill introduced by Mr. Nicoll instituting a system of Compulsory Health Insurance. This bill this year purported to have been introduced at the instance of the Federation of Labor, but the same forces that have been urgent for this sort of measure are in reality the strength behind it. The most persistent of these is the American Association for Labor Legislation. In addition to this bill another was introduced during the last days of the session by Mr. Waldman, a Socialist As-

semblyman from New York City, which besides instituting a system of Compulsory Health Insurance also provides for old age and unemployment insurance. This latter bill is evidence of the beginning of an attempt to secure the whole socialistic program of State Insurance, such as was inaugurated in Germany, which attempt your Chairman pointed out to you three years ago, was inevitably to follow the effort towards securing the enactment into law of Compulsory Health Insurance. A hearing was given on the former bill before the Committee on Judiciary, but the bill was never reported. Several minor amendments which did not affect the medical profession were made to the Workmen's Compensation Law.

Group (d) By agreement with the Department of Education no measures for the amendment of the Medical Practice Act were introduced at this session so far as concerns professional education.

Falling within the field covered by Group (e), three general measures were introduced.

First, a bill legalizing and licensing chiropractors, which was killed in the Committee on Public Health, went to the Committee on Rules, was reported by the Committee on Rules and immediately recommitted from the floor of the Assembly. The same fate befell the bill giving Osteopaths the right to administer anesthetics and practice surgery. A bill introduced by Senator Boylan for the licensing of drugless therapists, died in Committee.

The Society has been extremely fortunate in having been able under the antiquated system in use for the care of its interests in the Legislature not to have experienced serious injustice accruing to it by the passage of ill-advised and pernicious legislation for the past four years. It must, however, immediately become cognizant that this good fortune cannot recur year after year. It must realize that it has facing it three very determined forces bent upon securing their own interests regardless of the best interests of the public and of the medical profession, the sinister forces behind Compulsory Health Insurance, the activating energy of poorly informed so-called "sociologists" and "criminologists" on the question of drug addiction, and the extremely clever and highly financed forces behind which quackery is entrenched. The organization of the Society is too loose, its efforts are too inco-ordinate at present to present an effective opposition to these forces. The old methods pursued by the Society are unlikely longer to secure success. A complete reorganization of the practice of the Society so far as concerns legislation must, in the opinion of the Chairman, be immediately made.

It is recommended, therefore, that a bureau for the study of medical legislation be established in Albany in charge of a competent person,

preferably an attorney of experience in legislative affairs, for the purpose of collecting statistics and facts relating to public health and the medical profession as concerns legislation, who shall be under the supervision and direct control of the Society through the Chairman of the Committee on Legislation. This bureau would be able to carry on the necessarily enormous work that is becoming almost impossible in magnitude for the Chairman of your Committee to carry during the legislative session. It will serve as a continuing and continuous administration of legislative matters, it will be a constant source of information as to the correlative work in other states and countries and this action will be well paid for in betterment by a performance of what is coming to be one of the most essential features of organized medicine, that is a supervision over public health legislation which has thus far been too largely in the control of over-zealous experts part real and part self-constituted whose vision has been acute at times but not of necessity, either broad or far seeing.

I further recommend to your Society the necessity of taking some definite stand upon Compulsory Health Insurance, it is no longer possible for the Society to play hare and hounds with this question. As a body it has given expression to no definite opinion, it is like a man trying to sit on two stools, the fall is inevitable as the position is prolonged.

I further recommend a definite pronouncement by the Society as to its attitude on drug addiction. It is essential that this be done to offset the vilification and abuse that has been gratuitously heaped upon the profession because of the defects of a few—extremely few—of its unworthy members, by certain persons and groups in the community whose interests are neither unselfish nor sincere.

There are further recommendations that I shall take leave to present to the Society at its meeting.

Respectfully submitted,

JAMES F. ROONEY  
Chairman

April 20, 1918

## REPORT OF THE COMMITTEE ON MEDICAL ECONOMICS

### To the House of Delegates

Your Committee has studied the problem of Health Insurance, or Social Insurance, from various viewpoints. Considered as a medium for benefit to all or any of the social groups included within the scope of any plan so far advanced, it is, in our opinion, a failure. We report therefore, that this Committee is opposed to Health Insurance.

Refraining, however, that, ill advised as we consider them, the proponents of Health Insurance will continue their efforts to place some kind of a bill upon the statute books, the Committee on Economics considers it not only advisable but necessary to present two tentative propositions to you. First, several recommendations which we consider would be of advantage to the medical profession, and which we believe should be incorporated in any bill of similar character to those already printed, should Health Insurance become a law. These are similar to those adopted by the Medical Society of the County of New York. They are:

- 1 The medical profession shall be properly and adequately represented on the Commission, and on all Committees, Councils and other local boards which have to do with decisions affecting the relations of physicians with the various associations, societies, etc., working under the law and upon all other medical matter.

- 2 The Commission shall prepare and publish lists of panels of physicians in all the districts who are willing to work under the Act, and that every legally qualified medical practitioner shall have the right to have his name recorded on the list or panel.

- 3 The sick insured person shall have the right to choose any of the panel physicians in any district to attend and treat him for his illness, subject only to the physician's acceptance of the patient.

- 4 The insurance carrier shall make all contracts for medical and surgical attendance with bodies or associations of physicians in each district, to which association all panel physicians in that district must belong.

Second we wish to present the outline of a plan which we consider would secure what the workmen are striving for.

Your Committee believes that all who are interested in the propaganda for Health Insurance are actuated by honest motives, but that they are mistaken and that the fact that by all the bills so far presented they have unfortunately placed the workers in the false position of appearing to want something for nothing, is merely an error of judgment.

The following suggestions for a bill which would supply the worker with what he needs and enable him to pay for it accepting from the employer only that aid for which the employer himself receives full value in the better standards of health and consequently better efficiency of the employee are therefore, fundamentally different from prior bills and must appeal to the independent spirit and individualism of the American workman. At the same time these suggestions provide the workman with better medical treat-

ment, and increase, instead of ruining the efficiency of the medical profession

We believe that the expense to the employer incurred in our plan would prove a profitable investment by insuring a more complete return of the sick employee to health and his more prompt return to work

We fail to comprehend upon what basis the state can ever be justified in entering upon the practice of medicine, but we do realize that preventive medicine is a state function and that it can only be effectively applied to the masses by the authority of the state. Our plan, therefore, includes preventive medicine under the direction of the state

Legislators are usually and very properly, loath to vote public moneys for untried enterprises, but we trust that, should our plan possess enough of value to meet your approval and the approval of those other classes which are to be affected by Health Insurance legislation, this possible obstacle may be overcome

In presenting the following suggestions we wish to state that we accept the published statements of the American Association for Labor Legislation relative to the necessity for Health Insurance only until our own data, which are in process of accumulation, are completed. Further, we wish to say that the comparatively small amount of collected data, partially evaluated, does not appear to show the immense economic waste due to sickness which the above mentioned society presents, but shows other underlying and basic causes which so-called Health Insurance would not reach, but would cover up and leave, the smoldering causes of an increased amount of illness and greater financial waste

Our suggestions are as follows, and are, for convenience presented in the form of a tentative draft of a bill

## ARTICLE I

1 Short title This chapter shall be known as the "Health Insurance Law"

2 Definitions When used in this chapter

- 1 "Fund" means a local fund
- 2 "Hospital" is described in the text following
- 3 "Insurance" means health insurance under this chapter
- 4 "Disability" means inability to pursue one's usual gainful occupation
- 5 "Employer" means a person, partnership, association, corporation, the legal representatives of a deceased employer or the receiver or trustee of a person partnership, association or corporation of the state or a municipal corporation or other political division thereof
- 6 "Employee" means one in the service of another under any contract of hire, express or implied, oral or written
- 7 "Earnings" includes wages as determined by the fund and the reasonable value of board, rent, lodging and similar advantages given employees

by the employer and gratuities received in the course of the employment from others than the employer, but for the purposes of this chapter earnings shall not be considered to exceed dollars a week

- 8 "Dependent members of the family" includes a wife or dependent husband, a child under eighteen including dependent stepchildren and adopted children, but not including married children, sisters, brothers and grandchildren under eighteen when wholly dependent upon the insured person, dependent parents, the terms "brother and sister" include stepbrothers and stepsisters, half brothers and half sisters and brothers and sisters by adoption, "wife" means a woman to whom the insured is legally liable for support, the terms "adopted" and "adoption" include only legal adoption prior to the disability

3 Application of Chapter Benefits as provided in this chapter shall be paid or furnished in cases of sickness or accident, or of disability or death resulting therefrom, except in cases in which any liability for compensation or other benefits is imposed by the Workman's Compensation Law, or in which liability for damages, compensation or other benefits is imposed by any act of congress

On and after every employee employed in the state shall be insured, subject to a physical examination to be determined, in a fund and shall be entitled to benefits as herein provided, excepting employees whose employment is not in the usual course of the trade, business, profession or occupation of the employer, employees of the United States, and employees of the state and municipalities for whom provision in time of sickness is made through legally authorized means which in the opinion of the Commission are satisfactory. Persons residing in the state who cease to be employees within the meaning of this chapter shall automatically lose membership in the funds

## ARTICLE II

1 Minimum Benefits Every insured person shall be entitled to receive as minimum benefits from the fund which he joins pursuant to this chapter Medical, surgical and nursing attendance and treatment, medicines and medical and surgical supplies, for himself and for dependent members of his family, hospital or sanatorium treatment and maintenance, dental service, cash sickness benefit for himself or for the dependent members of his family, cash maternity benefit, funeral benefit

2 Medical, Surgical, Dental and Nursing Attendance and Treatment Funds shall provide in the manner hereinafter described to insured persons and to the dependent members of their families, all necessary medical, surgical and nursing attendance and treatment from the first day of sickness or the happening of an accident and to insured persons all dental services for necessary extraction and filling of teeth. Benefits provided by this section shall be furnished as and when necessary, provided that in case of disability such attendance treatment and service shall be limited to twenty-six weeks of disability in any one year and shall not be furnished for more than twenty-six weeks on account of the same case of disability

3 Medical and Surgical Treatment The (committees), (councils), (or) local (boards or) funds shall cause to be made a list of physicians resident within the district over which they have authority. Every legally qualified medical practitioner shall be entitled to have his name entered upon this list. It shall be the duty of every beneficiary under this list to immediately call for the services of any physician he may choose whose name appears upon the list or lists of his district upon the first appearance of sickness in himself or any dependent member of his family or any independent member of his family who may also be a beneficiary

Nothing in this paragraph shall be so construed as to deny any physician the right to refuse to accept any call.

The physician who is thus engaged shall continue the care of the individual until such time as he or she recovers and his services shall be paid for by the (committee) (council) (or) local (board or) funds upon voucher properly submitted and at rates prevalent in the community for like services under similar conditions. A discount of 20 per cent from the physician's bill shall be allowed to the body having jurisdiction to provide funds for clerical work and other expenses incident to the payment of the bill.

It shall be the duty of every physician engaged under this plan to report the recovery of the patient to the body having jurisdiction and in the case of an employee when he is able to return to work. He shall also report any malingering. Failure to comply with these requirements will be penalized by the removal of his name from the list of available physicians and he can be reinstated only by action of the Commission, to whom he is entitled to appeal.

4 Hospital Treatment Treatment in a hospital hereinafter provided for shall be furnished for each beneficiary under this act whenever the same is necessary and the attending physician at the hospital shall be compensated for his services at a rate not to exceed the prevailing rate for similar services rendered under like conditions to patients in their own homes except when the services called for are those of a specialist who is recognized as such by the Board of Managers of the Hospital when the compensation will be as hereinafter fixed. These charges shall be subject to a discount of 20 per cent and shall be paid by the local funds.

5 Nursing Service The local funds shall arrange with nurses who shall have qualifications to care for all beneficiaries under this act who shall be deemed by the attending physicians to require such services. They should be paid either by the case in which instance a reduction of 10 per cent shall be made from the bill rendered or be employed for stated intervals at a regular weekly (or monthly) wage.

6 Laboratory Facilities Laboratory facilities shall be provided by the state without cost to the beneficiaries under this act in the manner hereinafter provided for.

7 Medical and Surgical Supplies During the period for which the beneficiary is eligible for medical attendance and treatment all necessary medicines medical and surgical supplies dressings eye glasses trusses crutches and similar appliances prescribed by the physician shall be supplied by the local funds.

8 Cash Sickness Benefits to Insured Funds shall pay beginning the day of disability on account of sickness or accident a weekly cash benefit equal to two thirds of the insured person's earnings provided that cash sickness benefits shall not be more than eight dollars a week and except that if the insured person's earnings at the time of disability are less than five dollars a week, cash sickness benefit shall equal his full weekly earnings. Cash sickness benefits shall be paid for insured persons only and only during continuance of disability and shall not be paid to the same person for more than twenty six weeks in any one year or more than twenty six weeks on account of the same case of disability. The period during which hospital treatment is received by the insured person shall be included in computing a period of twenty six weeks.

9 Maternity Benefit Medical attendance nursing and supplies and appliances necessary for safe delivery shall be supplied to insured women and the wives of insured men. These shall be paid for by the local funds in the same manner as prescribed for medical services and supplies in cases of illness or accident. Cash maternity benefits shall be paid to insured women only and for a period of eight weeks of which six shall be

subsequent to delivery, upon certification of the attending physician that the beneficiary is abstaining from gratuitous employment. Benefits under this section shall be in addition to all other benefits under this chapter.

10 Funeral Benefits Funds shall pay the actual expenses of the funeral and burial of a deceased insured person as arranged for by the family or next of kin or in the absence of such by the officers of the fund up to the amount of \$100.

11 Additional Benefits (Regulations to be added)

12 Assignments and Exemptions (Regulations to be added)

13 Beginning of Right to Benefit (Regulation to be added)

14 Extension of Right to Benefit (Regulations to be added)

15 Reimbursement of fund (Regulations to be added)

16 Dental Benefits (Regulations to be added)

17 Prevention of Disease Sanitary officers. The Commission shall appoint in the manner hereinafter provided a sufficient number of sanitary officers and assistant sanitary officers to adequately fulfill the provisions of this chapter. It shall be the duty of the sanitary officer to visit or cause to be visited at stated intervals the places of employment and the houses of the insured in his district. He shall order such changes and improvements in the sanitary conditions of the shops and factories as are necessary to the preservation of the health of the workers and his orders shall in these particulars only supersede those of the representative of the State Department of Labor. He shall also order such changes or alterations in the homes as are necessary for their sanitation and shall direct the personal hygiene of the workers and their families.

Every order of the sanitary officer shall be mandatory, except that an appeal may be taken to the chief sanitary officer hereinafter provided for if for any reason his order entails unnecessary hardship or expense.

### ARTICLE III

1 Amount of Contributions Each fund shall compute its contributions so as to be sufficient for the payment of its benefits and its management expenses for the accumulation of its reserve (and for its apportionment to the guarantee fund).

2 Apportionment of Contributions The cost of insurance provided by this chapter for employed members shall be borne by the employees. Except that the expenses for the erection and maintenance of the district hospitals hereinafter provided for shall be borne by the employers.

3 Payment of contributions Each employer shall on the date on which he pays his employees or at least monthly pay to local funds the total contributions due from his employees to such funds. If such contribution is paid at such time he may deduct from the earnings of each employee the respective share of that employee in the contribution which shall be in proportion to the employee's earnings but must inform him in a method to be approved by the commission of the amount so deducted.

4 Rates of Contribution Where employees of several industries or trades are insured in one fund contributions may be fixed at different amounts for different industries or trades in proportion to the degree of sickness hazard in those industries or trades and shall be so fixed if the commission finds a substantial difference in the degree of sickness hazard.

5 Establishments with Unusual Sickness Hazards If the establishment of any employer presents a sickness hazard in excess of that normally prevailing in the industry or trade he may be assessed by the local funds an amount based upon the per capita cost of insurance under normal conditions and the per capita cost existing under the conditions of excess hazard.

Such assessment shall be subject to review by the Commission upon appeal

6 Contributions a preferred claim Contributions to funds due and unpaid shall have the same preference as a lien, without limit of amount, against the assets of the employer as is now or hereafter may be allowed by law for a claim for unpaid wages for labor

7 Penalty for failure to pay contributions If any employer neglect or refuse to pay any contribution due, under this chapter to funds, the fund to which the contribution is due may recover from such employer by suit in a court of competent jurisdiction the whole amount of contributions due on behalf of such employer and his employee or employees with interest at six per centum The employer shall not be entitled to deduct any part of the sum so recovered from the earnings of his employee or employees In case a disabled employee because of such neglect or refusal on the part of any employer, is not eligible for benefits, the fund from which the employee would otherwise have been entitled to receive benefits shall furnish benefits as if such employee were eligible The fund shall recover from such employer by suit in a court of competent jurisdiction the total cost of benefits so furnished The amounts so recovered shall be in addition to all other amounts recovered under this section

8 Unauthorized deduction from earnings prohibited An employer shall not deduct from the earnings of any employee any part of any contribution required to be borne by the employer, or make any agreement with any employee for the repayment of any part of such contribution Any employer who violates this section is guilty of a misdemeanor and upon conviction shall return to each such employee the total amount of deductions from such employee's earnings or the total repayments made by such employee and shall be punished by a fine of not more than ten dollars Every deduction or repayment in the case of each employee shall constitute a separate violation

## ARTICLE IV

### FUNDS

1 Division of the state into districts The commission shall divide the state into districts, corresponding to county divisions or otherwise, but no such district shall contain less than thousand persons subject to this chapter.

2 Establishment of Funds The Commission shall hold one or more hearings in each district, notice of which shall be given by advertisement in at least one newspaper published in the district and by any other method approved by the Commission The Commission shall thereafter establish a local fund, and in its discretion, may establish one or more additional local funds in each district The Commission shall then provide in each district for the election of a Board of Directors for each fund

3 Consolidation or Division of Districts or of Local Funds The Commission at any time on its own motion or on the petition of the Board of Directors of any fund may, after a hearing, consolidate two or more districts or two or more local funds, may detach a territory from one such district or such fund and annex it to another such district or such fund, or may create a new district or a new fund from parts of several or from one such district or fund already in existence, provided that no such district shall contain less than thousand persons subject to this chapter, and that the creation of such new fund will not impair the solvency of any existing fund

4 Powers of Local Funds Local funds shall be corporations and shall have all the power necessary to carry out their duties under this chapter

5 Approval by Commission No fund shall begin business until it is approved by the Commission The Commission shall approve a fund only after the names and addresses of the members of the Board of Directors

elected for the first year have been filed with the Commission and after approval and filing of its constitution The constitution of a fund and any amendments thereto which may thereafter be proposed shall contain such provisions as the Commission may direct and shall be put into operation only upon being adopted by the members of the fund and upon being approved by the Commission

6 Board of Directors Each fund shall have a board of not more than seven directors who shall be chosen from the body of employees resident within the district having jurisdiction The compensation of members of the Board shall be not more than five dollars a day for each day of attendance upon the meeting of the board No director shall hold any other office under this chapter

7 Duties of the Board The Board of Directors shall

- (a) Fill vacancies in its own number for unexpired terms,
- (b) Appoint all officers and employees of the fund and fix their salaries,
- (c) Make rules and regulations necessary for carrying out the purposes of the fund,
- (d) Agreements with and payments to legally qualified physicians and surgeons, with dentists, specialists, nurses, hospitals, pharmacists, institutions and associations, and any other persons necessary for the business of the fund,
- (e) Prepare and submit annually to the commission a financial statement and a report for the past year and a budget for the ensuing year,
- (f) Represent, direct and administer the affairs of the fund except as otherwise specified in this chapter

8 Officers' Bonds All officers of a fund who are entrusted with its monies shall be bonded, for amounts to be determined by the Board of Directors and approved by the Commission

9 (1) Employee Members of Funds Every employee subject to this chapter shall, by virtue of this chapter and after physical examination, be a member of the local fund of the district in which he is employed The Commission shall provide by regulation for the cases of persons regularly occupied in one industry or trade but temporarily employed in another Each member shall have one vote for members on the Board of Directors Membership for the purpose of this chapter shall terminate

(2) Upon expiration of a twenty-six weeks period during which cash sickness benefit or hospital treatment, as a substitute, has been furnished within any one year,

(3) Upon the expiration of the period of extended right to benefit during unemployment not due to disability,

(4) Upon ceasing to be employed within the meaning of this chapter, except as provided in this section and except that membership shall continue while the member is in receipt of sickness or cash maternity benefits, or hospital treatment,

(5) Upon joining another fund for the purpose of this chapter

10 Residents Without the District The industrial commission shall provide by regulation for the insurance of persons subject to this chapter who reside permanently or temporarily outside of the state, and for those who reside in a district outside of that in which they are employed

11 (1) Employers Funds Division of the state into districts for the establishment of hospitals The Commission shall divide the state into districts corresponding to county divisions or otherwise, but no such district shall contain less than thousand persons subject to this chapter, except that where because of inaccessibility the Commission may subdivide a district

(2) The Commission shall hold one or more meetings in each district, notice of which shall be given by

letter to each employer whose place of business is in that district

(3) The Commission shall thereafter provide for the election of a Board of Directors for the District Hospital to consist of seven members to be chosen from the employers whose factories or shops or places of employment shall be within the district

(4) The Board of Directors so elected shall after approval of the Commission, become custodians of the Hospital District Funds

(5) Amount of Contributions Each Hospital District Fund shall compute its own contributions so as to be sufficient for the erection (or purchase) of its hospital and the maintenance of the same except that amounts sufficient to pay for the actual cost of food and supplies furnished to insured persons or the dependants of insured persons shall, in each instance, be charged against and collected from the Local funds having jurisdiction. A Hospital District may obtain funds for the erection (or purchase) of its Hospital by an issue and sale of bonds at par approved as to amount and character by the Commission. The employers of the Hospital District shall be personally liable for the payment of these bonds at maturity and for the payment of interest thereon

(6) Apportionment of Contributions The cost of the maintenance of District Hospitals shall be borne by the employers except as provided in section 5 of article IV. The assessment against an employer shall be based upon the number of his employees and shall be calculated upon the per capita cost of hospital care in the District

(7) Payment of Contributions Each employer shall at regular intervals to be fixed by the Commission pay his pro rata share of hospital expenses to the Board of Managers of the District Hospital

(8) Rates of Contribution Where several industries or trades are represented in one Hospital District contributions may be fixed at different rates for different industries or trades in proportion to the degree of sickness hazard in those industries or trades and shall be so fixed if the Commission finds a substantial difference in the degree of sickness hazard

(9) Contributions a Preferred Claim Contributions to Hospital Districts due and unpaid shall have the same preference as a lien without limit of amount against the assets of the employer

(10) Consolidation or Division of Hospital Districts No Hospital District shall be annexed consolidated with another or divided without a two thirds vote of the employers of the district or districts affected and then only with the consent of the Commission

(11) Powers of Hospital Districts Hospital Districts shall be corporations and shall have all the power necessary to carry out their duties under this chapter

(12) Approval of Commission No Hospital District shall begin business until it shall be approved by the Commission. The Commission shall approve a Hospital District only after the names and addresses of the members of the Board of Directors elected for the first year have been filed with the Commission and after approval and filing of its constitution. The constitution of a Hospital District and any amendments thereto which may thereafter be proposed shall contain such provisions as the Commission may direct and shall be put into operation only upon being adopted by the members of the Hospital District and upon being approved by the Commission

(13) Board of Directors Each Hospital District shall have a board of not more than seven directors who shall be chosen from the employers whose places of employment are located within the district. They shall serve without compensation. No director shall hold any other office under this chapter

(14) Duties of the Board of Directors The Board of Directors shall

- (a) Fill vacancies in its own membership for unexpired terms
- (h) Appoint the attending physicians to the hospital and all employees except the employees of the laboratory who shall be appointed by the Commission as herein after provided for
- (c) Make rules and regulations necessary for carrying out the purposes of the hospital
- (d) Receive from the employer members the amounts of their respective contributions to the funds of the District
- (c) Receive from the Local funds of the Hospital District the amounts due for actual maintenance of the patients during their stay in the hospital
- (f) Prepare and submit annually to the Commission a financial statement and a report for the past year and a budget for the ensuing year
- (g) Represent direct and administer the affairs of the Hospital District except as otherwise specified in this chapter

(15) Officers & Bonds All officers of a Hospital District who are trusted with its moneys shall be bonded for amounts to be determined by the Board of Directors and approved by the Commission

(16) Reserve Each Local fund and Hospital District shall apportion annually to its reserve such percentage of its total annual income as the Commission prescribe and shall maintain its reserve at a level which the Commission considers adequate

(17) Property Tax Free Property of the Local funds and Hospital Districts and all other property used for the purposes of this chapter shall be exempt from all State Municipal or local taxes

(18) Penalties (to be provided)

## ARTICLE V

### DISTRICT HOSPITALS

1 Hospital Staffs The staffs of the District Hospital shall consist of a visiting staff a resident staff and a nursing staff organized in a manner similar to that of all modern general hospitals

- (a) The visiting physicians shall have qualifications equal to those of the visiting staff or any good general hospital in the same district. They shall be appointed by the Board of Managers of the hospital and shall hold their positions during the pleasure of said Board
- (b) The resident staff shall consist of Internes who shall be appointed by the Board of Managers of the hospital upon the advice of the visiting staff for a period of years. They shall be compensated for their service at a rate to be fixed by the Board of Managers of the hospital subject to the approval of the Commission and paid out of the funds of the hospital
- (c) The nursing staff shall consist of a superintendent and such assistants as may be necessary and shall when conditions permit include a training school. The expenses of the nursing staff shall with the approval of the Commission be paid out of the funds of the hospital

2 Duties of attending physicians in relation to transfer of patients to District Hospitals It shall be the duty of the attending physician whenever in his judgment such procedure is necessary to arrange for examination or treatment of a patient at a District Hospital and if the patient is referred for examina

tion only, to be present at the time of said examination. In the event of the patient having to remain at the hospital for treatment it shall be the duty of his attending physician to visit him (or her) sufficiently often to enable him to continue necessary treatment after the patient is discharged from the hospital. The attending physician shall be compensated for attendance at the examination of the patient, at the regular rate per house visit, by the Local fund having jurisdiction. He shall receive no compensation for his subsequent visits at the hospital, except for additional visits made at the request of the officers of the Local fund.

3 Duties and compensation of the visiting staff at a District Hospital. It shall be the duty of the visiting staff to examine each patient admitted to the hospital for examination or treatment, and to decide to which specialty the detailed examination or treatment should be assigned. There shall be no charge for this group service, the fee being paid to the specialist member of the visiting staff to whom the examination or treatment is assigned. The fee charged for examination by specialist members of the visiting staff of a District Hospital shall be fixed by agreement between the officers of the Local fund and the visiting staff, but in no instance shall the fee for examination be more than \$500, except when radiographs are necessary in addition to the regular examination, when an extra charge, to be agreed upon, is permitted. Fees charged for attendance by a member of the visiting staff during the treatment of a patient in the Hospital shall not be more than the fees for ordinary medical services charged per visit at the home of the patient by the regular attending physician, and shall be subject to the same discount. Fees for surgical operations shall be arranged between the operator and the Local fund.

4 Other Specialists. Should there be no Specialist in the required department or should the patient or his physician desire to consult some specialist other than the one connected with the District Hospital of his district, he may select his specialist, provided that the fee charged by the specialist should not be in excess of \$500, or that satisfactory arrangements regarding fees can be made between the specialist and the Local Fund having jurisdiction. Local funds shall pay all physicians' fees.

5 Laboratories. Laboratory Experts and Assistants. Each District Hospital shall contain a laboratory for pathologic and bacteriologic diagnosis which shall be equipped and maintained by the state. Laboratory experts and assistants, having qualifications to be determined by the Commission, shall be appointed by the Commission at salaries to be fixed by the Commission. It shall be their duty to make whatever laboratory examinations or analysis may be required to co-operate with the visiting staff to obtain complete and full diagnostic data and to perform such other services as may be necessary. They shall be paid by the state and no charges for laboratory examination, analysis or work shall be made.

6 Duties of Resident Physicians or Internes. They shall work under the direction of the visiting staff.

7 Duties of the Superintendent. The superintendent shall be in charge of the Hospital and of the nursing force. Her specific duties shall be defined by the Board of Managers. She shall receive a salary to be agreed upon between herself and the Board of Managers subject to the approval of the Commission, which shall be paid out of the Hospital District funds.

## ARTICLE VI

### SANITARY OFFICERS

1 Chief Sanitary officers. The Commission shall appoint a chief sanitary officer who shall be paid by the state, at a salary to be fixed by the Commission. He

shall direct the Sanitary Corps and the work in the state in those particulars covered by this chapter.

2 Sanitary Districts. The Commission shall divide the state into Sanitary Districts for the purpose of this Chapter.

3 Sanitary Officers. The Commission shall appoint Sanitary Officers, one for each district. These Sanitary Officers shall be physicians who are especially trained in matters of Public Health and Hygiene and shall be certified by the Civil Service Commission after examination. It shall be their duty to examine into the sanitary conditions of shops and factories within their districts, to order such changes as are required and to report to the chief sanitary officer. They shall also examine into the sanitary conditions of the homes of the insured and shall advise and direct the personal hygiene of beneficiaries under this Chapter.

4 Assistant Sanitary Officers. The Commission shall appoint Assistant Sanitary Officers when necessary. These shall be, preferably, female graduates of recognized training schools for nurses. The salaries of Assistant Sanitary Officers shall be fixed by the Commission.

## ARTICLE VII

### COMMISSION

1 A Commission of Public Health, replacing the present Health Commissioner of the State but including him in the membership is hereby created.

2 The Commission shall consist of three members and shall include, beside the Health Commissioner who shall be a physician, a representative appointed from the Association of Employers and one from the Association of Employees. All to be appointed by the Governor by and with the consent of the Legislature. The salaries of the Commission shall be fixed by the Legislature and paid out of the Treasury of the state.

3 The duties and authority of the Commission shall be the duties and authority of the present Commissioner of Health and in addition, the duties and authority contained in and conferred by this Chapter.

- (a) Powers of the Public Health Commission
- (b) Duties of the Commission
- (c) Report of Commission
- (d) Settlement of Disputes
- (e) Suits at Law

## ARTICLE VIII

### When to take effect

In closing its report your Committee wishes to emphasize its previous statement that this is merely a tentative report. We realize that there are many glaring imperfections in the bill which we have drawn. We believe, however, that we have presented Social Insurance in a new light and in feasible form, and we trust that this report may be of service in stimulating those interested in Social Insurance to abandon their plans of attempting to graft a purely European measure upon fundamentally different social and political conditions.

Respectfully submitted,

HENRY LYLE WINTER, *Chairman*,  
SAMUEL ALBERTUS BROWN,  
ARTHUR FREEBORN CHACE,  
GRANT G. MADILL,  
HENRY GOODWIN WEBSTER

April 1, 1918

# REPORT OF THE COMMITTEE ON MEDICAL RESEARCH

To the House of Delegates

The Committee on Medical Research desire to report that during the last session of the Legislature of the State of New York the usual measures to regulate animal experimentation were attempted. "An act to amend the education law in relation to experimentation upon living animals in the common schools of the state" and "An act to prevent cruelty by conferring upon the Board of Regents of the University of the State of New York the power of supervision of experiments on living animals" were introduced in the Senate by Mr. Boylun and referred to the Committee on Judiciary.

The various members of your Committee have given your Chairman most hearty support, and we are also indebted to the Public Health Committee of the New York Academy of Medicine for their cordial co-operation.

There were no hearings on the bills and they were not reported out of committee.

Respectfully submitted

FREDERIC C. SONDERMAN, Chairman

April 1, 1918

## THE REPORT OF THE COMMITTEE TO CONSIDER REDISTRICTING THE DISTRICT BRANCHES

To the House of Delegates

The Committee to consider Redistricting the District Branches has conducted its meetings entirely by correspondence.

It issued to each Branch under date of September 5, 1917, and to each County Society under date of September 10, 1917, a questionnaire from the answers to which it expected to formulate some suggestions. Copies of these letters are made a part of this report.

As the Committee considered that any changes made in the present grouping of the County Societies in the District Branches should receive the support of the County Societies directly involved and as the letter seemed to offer a basis for considering changes it was very greatly surprised at the apathy and lack of interest shown by the constituent bodies in the movement, for it has received but nine replies out of a possible sixty-seven and with one exception all unfavorable to any alteration.

As the Committee has not felt that propaganda for change was within the scope of its functions it ceased its activities.

My Committee therefore, begs leave to report that the profession as a whole is not yet ready to entertain a movement toward a change of

grouping, and that those best qualified to present the facts should agitate the subject matter in those Districts which would be most benefited by a change.

Respectfully submitted

ALBERT T. LATLEY, Chairman  
ARTHUR W. TEFREY  
LEWIS H. FINCH

April 1, 1918

## REPORT OF THE COUNSEL

To Dr. ALEXANDER LAMBERT as President of the Medical Society of the State of New York, to the Council and to the House of Delegates of the Medical Society of the State of New York

SIRS

I have the honor to transmit to you herewith my report as the legal representative of the Medical Society of the State of New York for the year 1917.

Again I am glad to report that during the past year not a single case has been lost. Thirty-one cases have been finally disposed of during 1917.

Thirty-eight new actions were brought during this year, but this number does not contemplate a situation where husband and wife bring separate actions against the same defendant for the same case. The real number of cases brought during the year 1917, therefore, is a few in excess of this number.

On an examination of my report for 1916 you will find a case which is now in the Court of Appeals. This case has not been determined, but I believe will be argued during the month of May, 1918. The cases on appeal have been filed and the briefs prepared served and filed. In many respects this case is an important one because it is hoped that the Court of Appeals will lay down some rule to guide the profession in its relationship to any hospital wherein a surgeon is called upon to operate and the patient selects the hospital—whether he is required to take the responsibility of the nurses and internes and the equipment of the hospital, good or bad, or whether the hospital is responsible where miscounts, dirty instruments or other bad equipment lead to an unfortunate result.

In each year there are always one or two cases that stand out prominently as most interesting. During 1917 there were two as follows:

One was a case where the patient claimed that having been sent to a hospital by her family physician and placed in the care of a surgeon, she was operated upon by him without authority from her or her husband for a cancer at the end of the radius and that the operation was carelessly performed which facts presented two very serious questions. Three different sets of

attorneys appeared in this case which was finally tried at the very end of the year, indeed, the verdict in favor of the doctor was rendered the day before Christmas. The case involved the transplantation of a piece of bone from the shin of the patient into her arm. The graft healed perfectly, but subsequently the original malady reappeared at the end nearest the hand, with a resultant serious deformity and erosion of bone. The involvement of the two serious questions, —negligence and constructive assault, together with the success of the operation even though an attack was made upon the doctor, makes this one of the remarkable cases of the year.

The second case was one brought for the death of a child who was bitten by a mad dog, it was claimed. The trial of this action occupied about nine days and resulted in favor of the doctor. Briefly, the facts were that a little boy was attacked and bitten by a dog, and some six weeks later developed some of the symptoms of actual rabies. Unfortunately for the plaintiff's contention, there were other symptoms which appeared which did not coincide with the diagnosis of rabies, but did present a very plain case of poliomyelitis. A case of rabies as the foundation for an action for malpractice being so very rare, I feel that I am justified in referring to this case in my report.

It might be interesting to the members of the Society to know that at last the Dental Society of the State of New York has awakened to the importance of organized malpractice defense. Inquiry has been made of me as to my willingness to defend the members of that very large and distinguished organization.

Again it affords me no little pleasure to thank the unselfish distinguished members of your profession in all parts of the State who, without recompense are willing at a moment's notice to come into court and tell the truth for the benefit of fellow practitioners, without feeling of jealousy, and with but one thought in mind, namely, to stem the tide of unwarranted attacks started by dissatisfied unscrupulous patients.

The following is a list of cases begun during 1917.

1 This case was begun at the very beginning of the year. Several doctors were sued by plaintiff, who claimed that she had been placed in an insane asylum without justification—a case somewhat similar to the one brought several years ago in another part of the State. In this case some five attorneys appeared and the questions involved not only brought in the plaintiff but other members of her family as subjects for mental treatment and care. The action was begun in New York County and your counsel on behalf of all of the attorneys in the action, moved the case from New York County to a remote county of the State. There were many extraordinary situations presented in this case which have no place in my report. The case finally terminated successfully for the doctors.

2 This action was one for \$15,000, in which it was alleged that plaintiff a piano player, had his back and left shoulder burned incident to the use of X-rays,

and that he was confined to a hospital from November, 1915, to February, 1916, and in his complaint expresses the fear that his injuries and suffering may be permanent.

3 Plaintiff in this action broke her right arm at the elbow in 1915, but alleges that the defendant was so unskillful in his attempt to reduce the fractures at the elbow that her arm became stiffened, has grown out of shape and is crippled. This action is for \$25,000.

4 This action was brought to recover damages against two defendants, one of whom was represented by your counsel and the other by other attorneys. The question was with reference to the removal of an appendix, and it is claimed that instead of the appendix being removed it was allowed to remain and was subsequently removed by other surgeons. The defendant represented by your counsel was attacked with tuberculosis, went to the Adirondacks for relief, and subsequently died. By reason of his death the action against him abates.

5 This case refers to the one above and involves the very same question. Originally the defendant in this action applied for defense, and after your counsel had drawn up an answer and served it, it was returned on the ground that other counsel had been employed by the doctor. They are now defending this second defendant, and your counsel has no further relationship to the case, although this doctor did apply for defense.

6 Application was made for defense in this case, which is No 7 on the list filed with the Secretary of the State Society, but no complaint has ever been served and I find no correspondence to indicate to what the case refers. Should this action ever be actually begun, a report will be made in my next annual report.

7 This is an action brought by a school teacher, who claims that the doctor left some material in her head after having treated her for a diseased condition of her nasal sinuses. The Statute of Limitations was set up in this case, and thereafter the plaintiff changed the date in the complaint to bring it within the Statute. As this case is on the eve of trial it cannot be discussed any further at this time.

8 This action is one against a hospital represented by an insurance company, and against a doctor whom your counsel represents. It is claimed that a woman was taken to one of the hospitals and there operated upon as a pay patient, and without her authority was taken from her private room and exposed in a clinic while dressings were made. This case cannot be discussed any further, as it is on the eve of trial.

9 This action was first brought to your counsel's attention by a letter, a copy of which was sent to me by the doctor, which he had written to his patient. The condition presented was appendicitis and inflammation of the female viscera. An operation was performed, and after several weeks plaintiff changed her doctor. Only a summons was served in this action, a notice of appearance was served by your counsel, time was given to serve a complaint, which was never done, and finally the case was discontinued and the matter ended. Evidently the plaintiff intended to avoid payment of the doctor's bill, but failed.

10 Application for defense was made by the defendant in this case by reason of his receipt of a letter threatening him with a malpractice suit. The lawyer's letter charges negligence which resulted in the death of a child. A careful examination of the doctor's statement convinces me that there is absolutely no merit to the claim, and doubtless no action will ever be begun.

11 This action was one brought to recover for the death of a child who had been bitten by a dog thought to have rabies. There was no proof in the case that the dog had rabies. The action has been tried and decided in favor of the doctor. There was not proof in the case that the child died of rabies, but that in

taking care of the wound the doctor had been extremely careful and followed out the rules of the health officers by directing the family to report the matter to the police for investigation. This case is an interesting one and has been referred to elsewhere in this report.

12 Treatment for syphilis is the foundation for this action and it is alleged that the patient did not have syphilis but that the defendant injected arsenic and that these injections were done carelessly and that by reason thereof the patient was injured.

13 The foundation of this claim is that the defendant having been employed by a woman to attend her during childbirth was so careless and negligent that the patient died. One of the claims is that the defendant attempted to give an anæsthetic without an assistant.

14 The charge against the defendant in this case is that he treated the patient for rheumatism when as a matter of fact he was suffering from some disease of the bone. He claims that the doctor used nothing but hot fomentations refused to have a consultant and as a result of the failure of diagnosis the patient lost his leg four of his vertebra and that he is still suffering. The difficulty with the plaintiff's claim is that it is so very far away from the facts that your counsel feels that the action will never be brought on for trial but as it is approaching the time for trial further discussion cannot be indulged in now.

15 The claim of this plaintiff is that his finger was broken and apparently by reason of some negligence of the defendant which does not appear in the papers he has been damaged. By reason of letters written to the doctor he applied for defense but up to the present time no summons or complaint has ever been served on the defendant. I have personally answered a letter from the attorney.

16 This claim is founded on the alleged failure of a doctor to properly cure for a fractured foot. The claim is that the bones of the foot did not heal that they remained displaced and have never reunited and that now it is impossible to repair them.

17 This is an action wherein it is claimed that in the doctor's attempt to treat swollen testicles he advised the patient that it would be necessary to remove them and that subsequently the doctor did remove them and the patient claims that they were in good condition and healthy. The sum asked for is \$20,000.

18 This is an action brought against a doctor wherein it is claimed that he was negligent by reason of having left in a wound a piece of drain consisting of rubber and gauze inserted for drainage. This case is on the eve of trial and cannot be further discussed.

19 This case is one brought in one of the inferior courts. Plaintiff claims that she was given heart disease and became neurotic after an examination of her ear by the defendant.

20 The gravamen of this complaint is that the patient suffered burns while being treated with an electric lamp and after the lawyer had written to the doctor the doctor applied for defense. I advised him not to answer the letter and no action has been begun. I am advised that an insurance company is looking after this case and I am therefore only counsel in the case.

21 This action was begun when the doctor attempted to collect his bill and a counterclaim was set up for negligence amounting to \$500 wherein it was claimed that the doctor had improperly prescribed and administered or caused to be administered internally injurious doses of iodine.

22 The basis of this action is a claim that one of the various defendants whom I represent was with the other defendants concurrently negligent in that they all prescribed and directed the use of dangerous and

improper materials for an eyewash and that the medicines were in improper and dangerous proportions which caused the loss of plaintiff's sight, it is claimed.

23 The foundation of this case is the claim of the patient that the doctor was called to treat her for pains in her ankles and feet from which she suffered for some time. It appears that she was originally received in a clinic but subsequently one visit was paid to her by the doctor whom she sues. There is little chance of the case ever being brought on for trial.

24 Plaintiff in this action fell on his foot and called the defendant who he claims undertook to treat and care for his injuries and give him medicines. Plaintiff alleges that the medicines were applied but that the doctor failed to diagnose fractures of three of the bones of his right foot and avers that by reason of the doctor's negligence the fractures were never reduced and cannot now be reduced.

25 This action is one of the cases which might perhaps be specially referred to and would be if it had been tried but as it is about to come on for trial it cannot be discussed in detail. The patient in this case was injured in an automobile accident and was so near death when the defendant reached him that it was a very serious question for some hours whether the patient's life could be saved. His life was saved, a wonderful result was secured by the doctor in his treatment which involved not only the care of fractures but internal injuries and your counsel is frank to say that such a reckless attack upon any surgeon has rarely come into his hands.

26 The defendant in this action is a co defendant in the foregoing action. Both defendants answered the complaints.

27 The plaintiff claims in this case that an operation was performed at one of the public hospitals for the purpose of removing part of a needle which had become imbedded in the right hand, but by reason of the defendant's negligence the wound caused by the needle and by the attempt of the surgeon to remove it became infected. The claim in this case is for \$10,000.

28 No summons and complaint has ever been served in this action but the foundation of the claim is represented by a letter written by the attorneys to the doctor claiming that the proposed defendant was guilty of negligence because a needle was left in the patient's side after operation for gallstones. There seems to be no foundation of truth in this case.

29 This action is one in which I represent one of the defendants. It transpires that the other defendant had allowed his dues to lapse and employed other counsel to defend him in the same action. It is claimed that the plaintiff after having fallen down through a trap onto his head and face was improperly treated by these defendants. As this action will soon be tried it is unwise to discuss it any further just now but so far as my client is concerned there is but little indication of success on the plaintiff's part.

30 Plaintiff in this action claims that she employed the doctor to remove her uterus and after some treatment submitted herself for operation but that he failed to remove it and that by reason thereof she asks damages for \$10,000 because she will have to undergo another operation for its removal. A second cause of action in this case is that she employed the defendant to remove her womb but that he performed some other operation without her authority and for that reason also she will have to have some further surgical procedure. Frankly there is little likelihood of this case coming to trial because there are some facts which are very convincing in favor of the defendant.

31 It is claimed in this case that the patient having

selected her hospital, was operated upon by the defendant, who negligently and unprofessionally inserted and permitted a foreign substance, commonly known as sponges or gauze, to remain lodged in and about plaintiff's abdomen, and that he did not inform her that they had been lodged there and failed to remove them. Plaintiff also avers that the "cannals of the stomach of the abdomen became inflamed and the parts of plaintiff's person became filled with pus and became swollen."

32 It is claimed in this case that the defendant was negligent, in that he did not diagnose some ailment from which the plaintiff's intestate was suffering, although the plaintiff does not know what the trouble was, and because the defendant did not find out the nature of the ailment and the plaintiff's intestate died, the administrator sues. This is the foundation for the complaint.

33 This action is brought to recover for the death of a child from scarlet fever. The doctor is represented by his own attorney, and while he has applied for defense the matter has not been brought to your counsel's attention, although before the action is tried it doubtless will be.

34 This claim represents one in which suit was threatened in a letter written by an attorney, wherein it is claimed the patient was burned. The letter received from the attorney was sent to your counsel, and I immediately wrote the proposed defendant to apply for malpractice defense and make no response to the letter. The matter rests there at the present time.

35 A summons was served in this action, and a notice of appearance was served by the defendant, the time to serve a complaint was extended, but it has long since expired. After a reasonable length of time a motion will be made to dismiss the case. The case refers to a dog bite, as appears from the statement of the doctor filed with me.

36 This action is for \$25,000 brought against the defendant, wherein it is claimed that during a confinement the defendant was so negligent in caring for the patient that the placenta was torn and a large portion of it was permitted to remain, and that blood-poisoning supervened and the general health of the patient was ruined.

37 In this case nothing has been done except to serve a summons, and a notice of appearance has been served by your counsel and the time to serve a complaint has been extended. This time has expired, and after a reasonable length of time a motion will be made to dismiss the case.

Before finishing my report I feel it is my duty to finally comment upon a subject which involves a very serious matter—the relationship of the State Society to an insurance company. The State Society is being placed in a very serious and false position with the public. Organized malpractice defense was never instituted, nor has it ever been maintained as an adjunct of any insurance company. The dissatisfied patients and the lawyers who indulge in this class of cases are gaining an erroneous idea, namely, that the State Society pays for settlements. More publicity must be given through whatever channels are available in the State Society, to dispel this thought which has prompted many a malpractice case.

The State Society must take some further decided stand whenever it appears that the doctor

who is being defended by your counsel, wishes also to make use of an insurance policy. You must keep before the public, and in that way before the patients and the lawyers, the fact that if a doctor chooses his insurance policy instead of the organized defense and support of his brother practitioners, he must take the consequences without the expectation of that unselfish support which the State Society accords him.

These insurance companies have legal representatives in different parts of the State, oftentimes men of great training in ordinary negligence litigation, but that class of litigation is so far apart from the defense of malpractice cases, that these lawyers can hardly be expected to bring to the assistance of the doctor more than the general knowledge accompanying that class of lawsuits.

Naturally enough the insurance companies cannot afford to employ an expert in the various districts of the State, and it is for that reason that they must balance possible losses in verdicts against the premium charged each member—\$10 to \$25.

The members of the State Society should stop to think that in the last twenty years but four verdicts have been sustained, and if those verdicts had been paid in full they would have aggregated not more than \$8,000, and then consider that if the membership of the State Society had paid the lowest insurance rate for which a policy is written in that same period of time, there would have been paid in insurance premiums by the membership of the Society, \$1,600,000. Is it any wonder that the insurance companies are doing their best to secure policies from doctors? Is it any wonder that they want to get County Societies or local communities of doctors to take community insurance?

If we were to assume that the State Society were an insurance company and the results attained were a basis upon which to compute the premium rate, then the Society might well issue policies for \$1.00 a year each, instead of which there is demanded by insurance companies anywhere from \$10 to \$25 for each member. Why?

*As a fact, less than \$1,000 has been actually paid in settlement or after suit by the entire membership of the State Society in twenty years, wherein your counsel has been the sole defender of the case.*

Because I think it unnecessary to ever again refer to this insurance proposition as a menace to the State Society membership, I feel that it is proper to add the following incident which occurred since the completion of the work for 1917. A case was tried recently in which your counsel represented one of two defendants and an insurance company represented the other in the same case. The defendant represented by your counsel was absolved by the jury, and a verdict for \$7,500 was rendered against the

other defendant represented by the insurance company

Your attention is called to the fact that your counsel has been called upon from time to time to advise members on all sorts of subjects, and especially one of grave import in which one of the well known physicians of the State was attacked under the "Boylan Law" for not keeping a record of every quarter grain of morphine which he had received and dispensed. There has been an investigation in the State with reference to the sale of narcotic drugs, and there should be but one answer to the whole proposition, namely, that the Federal Enactment should be re-enacted in the State of New York just as it is so that there will be no conflict of authority or law with reference to the purchase, sale and administration of narcotic drugs by doctors.

Finally, I would say that the year 1917 has been a most satisfactory one during which I have had the enthusiastic co-operation and support of each member of the Society whenever I have been required to call upon him in an emergency.

All of which is respectfully submitted,

JAMES TAYLOR LEWIS  
*Counsel*

December 31, 1917

## REPORT OF THE COUNCILOR OF THE FIRST DISTRICT BRANCH

### *To the House of Delegates*

Owing to the death of Dr. Richard Giles, President of the First District Branch, it falls upon me to report the work of the First District Branch of the Medical Society of the State of New York.

A very successful meeting was held at the Palatine Hotel, Newburgh, New York, Friday, November 9th, 1917. Dr. Richard Giles, President, occupied the Chair. 125 members were present.

It was moved, seconded and carried that the minutes of the last meeting be accepted as printed in the *New York State Journal of Medicine*.

Dr. Floyd M. Crandall, Secretary of the Medical Society of the State of New York, urged the importance of securing good presiding officers for the Branch meetings and of their work in the State Society meetings.

After the business meeting, the members of the Society participated in a luncheon furnished by the Management of the Palatine Hotel.

The afternoon was given up to a very interesting and scientific program as published in

the December 1917, issue of the *New York State Journal of Medicine*.

I wish at this time to thank Dr. Floyd M. Crandall, Secretary of the Medical Society of the State of New York, for the information given me as to the past and future duties of the President of the First District Branch.

Respectfully submitted,

JOSEPH B. HULETT,  
*President*

April 1, 1918

## REPORT OF THE COUNCILOR OF THE SECOND DISTRICT BRANCH

### *To the House of Delegates*

The eleventh annual meeting of the Second District Branch of the Medical Society of the State of New York was held on October 24, 1917, in Brooklyn in the building of the Medical Society of the County of Kings.

A short opening speech was made by the President, Dr. Arthur H. Ferry of Patchogue, who also gave an informal report from the Executive Committee.

Dr. Floyd M. Crandall, the Secretary of the State Society, was also present, and made a short address.

To the communication from the Committee of Three in the House of Delegates in regard to redistricting the State, the Society voted as follows:

To question No. 1 "Does the present grouping of counties in your district tend to secure the largest attendance at district meetings?" the Society voted Yes. To question No. 3, the Society voted that so far as this branch goes the present grouping gives a fair and equitable representation in the council in the smaller county societies.

There being no other business the meeting proceeded to the scientific session.

I. 'General Characteristics of Gun Shot Wounds and their Treatment under the Conditions of Modern Warfare,' Walton Martin, M.D., New York City.

II. 'Infectious Diarrhoea of Infancy,' Carl H. Laws, M.D., Brooklyn.

III. 'The Diagnostic Value of Opaque Substances in the Kidney and Bladder Regions,' Nathaniel P. Rathbun, M.D., Brooklyn.

The President being out of town and the Secretary, Dr. Richard F. Seidensticker, having gone to war, this report is respectfully submitted by

FRANK H. LASHER  
*Secretary Pro Tem*

April 1, 1918

REPORT OF THE COUNCILOR OF THE  
FOURTH DISTRICT BRANCH*To the House of Delegates*

There have been regular meetings in all of the County Societies, generally once a month. These meetings have been well attended and scientific papers have been presented by the members and also visiting physicians.

On account of the size of the district and the great distance to be covered I have found it impossible to visit all of the counties but expect to do so during my term of office.

We have made a special effort to secure for members all those desirable in the various counties and believe this district has at least two of the banner counties in the State.

The Fourth District is well represented in military service.

The regular meeting of the Fourth District was held in Amsterdam, August 30, 1917, and was attended by ninety members. Papers presented by the members of the district were both practical and scientific.

The matter of dividing the district has been brought to the attention of the various counties and I have had expression from all of them in regard to the same. While we feel that the size and the location of the district makes it very difficult for members in one end of the district to attend meetings in the other, the majority of the men seem to prefer the present arrangement and believe that we would have a better representation under the present plan. At least eight out of the ten counties have expressed themselves against the division of the district.

Respectfully submitted,

LEW H FINCH.

*President*

April 1, 1918

REPORT OF THE COUNCILOR OF THE  
FIFTH DISTRICT BRANCH*To the House of Delegates*

The annual meeting of the Fifth District Branch was held at Oswego, on October 4, 1917. The following officers were elected for two years: G. Massillon Lewis, Vernon, President; William D. Alsever, Syracuse, 1st Vice-President; Charles Bernstein, Rome, 2nd Vice-President; Horace B. Pritchard, Syracuse, Secretary; Nelson O. Brooks, Oneida, Treasurer.

The Society was honored by the presence of Dr. Floyd M. Crandall, Secretary of the State Society, who gave an interesting and instructive address on matters pertaining to the welfare of the State Society. The attendance was large, about 135 being present. The programme which was a well balanced one was carried out and the discussions excellent and

spirited. At the end of the morning session the Society was the guest of the Medical Society of the County of Oswego at a most delicious luncheon at the Hotel Pontiac. The question of re-districting the State was freely discussed and on vote the Society was unanimously opposed to disturbing this district as it is now composed, the wisdom of which is shown in the large attendance at all our meetings, the excellence of our programmes and the interest taken in the discussions.

Respectfully submitted,

JAMES F McCaw,

*President*

April 1, 1918

REPORT OF THE COUNCILOR OF THE  
SIXTH DISTRICT BRANCH*To the House of Delegates*

The Eleventh Annual Meeting of the Sixth District Branch of the Medical Society of the State of New York, was held on Tuesday, October 9, 1917, at the Glen Springs, in Watkins.

The following officers were elected for the ensuing year:

President, R. Paul Higgins, M.D., Cortland

First Vice-President, Leon M. Kysor, M.D., Hornell

Second Vice-President, John M. Quirk, M.D., Watkins

Secretary, Charles H. Gallagher, M.D., Ithaca

Treasurer, Stuart B. Blakely, M.D., Binghamton

The following scientific program was carried out:

"The Place of Water in Therapeutics," Simon Baruch, M.D., New York

"Treatment of Benign Growths of the Female Breast," John B. Deaver, M.D., F.A.C.S., Philadelphia (Read by title)

"Some Problems in the Treatment of Diabetes," John R. Williams, M.D., Rochester

"Pylorospasm in Children," John A. Bennett, M.D., Elmira

"Acute Intestinal Obstruction," Harvey P. Jack, M.D., F.A.C.S., Hornell

"An Analysis of Physical Examinations Under the Selective Service Act," George Henry Fox, M.D., Binghamton

"Some Observations of Cases of Chorea," John M. Quirk, M.D., Watkins

There was an attendance of 125 physicians, and all of the papers received good discussions.

The subject of alteration of boundaries of the Sixth District Branch was brought up, and after full consideration it was decided the present grouping of counties appeared to be as satisfactory as could be arranged, so no measures were passed asking for a change.

In reporting this meeting, we desire to express our deepest appreciation of the cordial reception and generous entertainment provided by the management of the Glen Springs. The

members, with their visiting wives and friends, were served with a bountiful dinner, and the spacious lounging room provided an ideal meeting place. We had the honor of having as our guests, Acting President Hilsted, Second Vice-President Albert Warren Ferris and Secretary Floyd M. Crandall of the State Society.

Respectfully submitted,

ARTHUR W. BOOTH, *President*

April 1, 1918

#### REPORT OF THE COUNCILOR OF THE SEVENTH DISTRICT BRANCH

##### *To the House of Delegates*

In presenting this, my final report as President of the Seventh District Branch, I wish to extend to the entire membership of the County Societies of Cayuga, Livingston, Monroe, Ontario, Seneca, Wayne and Yates, my warm appreciation of the great honor of acting as President and Councilor for this district for the past two years and to thank each Society and each member of each Society for the very earnest and loyal support of the welfare and traditions of the profession and of the Society.

The war has fallen with a heavy hand on our Society and it is with a degree of humble pride that we may point to the loyal and prompt response which our members have made to the call of our government. Approximately 20 per cent of the entire membership of the Seventh District Branch is in the service of our country. Those of us who are not able to go to the front recognize the sacrifice and patriotism of those who go and are looking after their interests with the same loyalty that is shown by their enlistment.

Each Society in this District has held its usual number of meetings and has taken an active interest in all matters which pertain to the welfare of the profession. The annual meeting was held at Canandaigua and the attendance was large.

In the matter of redistricting of the State Society the following report was accepted and ordered sent to the House of Delegates:

At this time Dr. Collier of the Crug Colony, Sonvea, as a special committee appointed to consider the necessity of redistricting the Seventh District Branch, made the following report:

Dr. W. M. Brown, *President*

The committee appointed by you for the purpose of considering the redistricting of the branches of the State Medical Society begs to make the following report relative to the status of the Seventh District Branch:

*First*—The Seventh District Branch we feel at this time constituted is suitably arranged geographically for good attendance at all meetings

save possibly the geographical position of some parts of Cayuga County. The attendance at the meetings of our branch has always been large and but little criticism could be made as to our present arrangement.

It has been suggested however, that there be some changes made to permit of a more equitable representation in the State Council of the smaller county societies. That is, the districts could be arranged according to the membership so that each councilor would have approximately the same number of members to represent. However, we feel that this is a matter that should be considered by the House of Delegates of the State Society, and also the matter of the transfer of any county from one district branch to another should be first considered by the individual county society.

Moved, seconded and carried that the report be accepted, placed on file and a copy sent to the House of Delegates.

The various societies in this district are still actively opposed to Compulsory Health Insurance.

Respectively submitted,

WILLIAM MORTIMER BROWN  
*President*

April 1, 1918

#### REPORT OF THE COUNCILOR OF THE EIGHTH DISTRICT BRANCH

##### *To the House of Delegates*

During the year expiring December 31, 1917, I attended a number of the regular meetings of the County Societies comprising the Eighth District Branch.

Generally the officers were giving splendid attention to the affairs of their respective Societies, legislative and economic questions were presented.

The scientific programs showed careful consideration of the needs of the membership while the subjects presented with the accompanying discussions were strictly up to date.

The annual meeting of the Branch for 1917 was held in Buffalo and consisted of three sessions, covering parts of two days. The attendance was about one quarter of the membership. The program which was largely clinical elicited much interest and crisp discussion.

Additions have been made to the membership in each county although much is still to be desired in this regard.

Respectfully submitted,

ALBERT T. LITTLE,  
*President*

April 1, 1918

## Medical Society of the State of New York

### One Hundred and Twelfth Annual Meeting.

The One Hundred and Twelfth Annual Meeting was called to order, May 21, 1918, at 11 A. M., in Chancellor's Hall, Albany, by the President, Dr. Alexander Lambert.

Prayer was offered by Rev. Roeliff H. Brooks.

Dr. Arthur J. Bedell, Chairman of the Committee on Arrangements, announced the entertainments, the places of meeting of Sections, etc. Hon. James R. Watt, Mayor of Albany, delivered the following:

Mr. President and Members: One of the members of your local committee on arrangements sent me a few days ago a copy of Chapter XI of your By-Laws, which provides that no address except the President's and orators shall consume more than twenty minutes in its delivery. I am sure, I shall not occupy twenty minutes.

I wish to assure you, that while I appreciate the consideration and the manner in which the request was stated, I also recognize it was done for our mutual benefit, and I have not the slightest intention of violating your By-Laws on my first appearance before you.

It is a source of great gratification to be asked to address you. There is a sentiment attached to this meeting which should not go by unrecognized. This is somewhat in the nature of a home-coming, and as mayor of the city I feel that I have a parent interest in welcoming you back to our home. According to our distinguished citizen, Dr. Frederic C. Curtis, who was your president some eleven years ago, and for seventeen years your secretary, your Society was born in Albany. It spent its early days and middle years in this paternal fold, and it is your home and future gathering place. After going afar, you have now returned to the old fireside. Albany today welcomes you with the love of a parent to a returning child. Individually and collectively, you are a credit to your birthplace. Professionally you stand in the first ranks of those who are giving their labors to the alleviation of suffering mankind. The people of Albany through me bid you Godspeed as a society and sincerely hope that as a result of your visit medical science may receive an impetus to advance that will be for the good and welfare of us all.

In the name of the citizens of the City of Albany I bid you a cordial welcome to our city.

President Lambert thanked the Mayor, in behalf of the Society, for his cordial and kindly address of welcome and assured him the return to Albany after a period of a few years was a source of the greatest pleasure that each one looked forward to for many months in advance.

President Lambert then introduced the Hon. James M. Beck of New York who delivered an address on "The Psychology of the War."

FLOYD M. CRANDALL, Secretary

\* See page 209

## HOUSE OF DELEGATES

The regular annual meeting of the House of Delegates of the Medical Society of the State of New York was held in Chancellors Hall, Educational Building, Albany, Monday, May 20, 1918 at 3 P. M. Dr. Alexander Lambert, New York, President, in the Chair, Dr. Floyd M. Crandall, New York, Secretary.

The Secretary called attention to a ruling of the Council with reference to dispensing with the calling of the roll at the first session of the House of Delegates and stated that the roll would be called at the adjourned meeting Tuesday morning, preceding the election of officers.

THE PRESIDENT: If there is no objection to this, the House will proceed to the transaction of business.

The Secretary stated that owing to the death of Dr. Richard Giles, President of the First District Branch, Dr. Joseph B. Hulett was now President of the Branch and therefore entitled to a seat in the House of Delegates.

The Secretary also announced the resignation of Dr. James P. Marsh, President of the Third District Branch, and stated that as soon as the resignation of Dr. Marsh was accepted, the First Vice-President, Dr. Luther Emerick, would become President of the Branch, and entitled to a seat in the House of Delegates.

It was moved that the resignation of Dr. Marsh be accepted. Seconded and carried.

THE PRESIDENT: The next thing in order is the reading of the minutes of the 1917 meeting of the House of Delegates.

THE SECRETARY: These minutes were published in full in the May number of the NEW YORK STATE JOURNAL OF MEDICINE, and if there are no corrections, I would suggest that they be accepted as printed.

DR. VAN COTT: I move that the minutes of the 1917 meeting be accepted as published. Seconded and carried.

THE SECRETARY: I have the credentials of Dr. J. A. Stevenson, Chester, Vermont, as a delegate to this body from the Vermont State Medical Society.

It was moved and seconded that the credentials of Dr. Stevenson as delegate be accepted. Carried.

President Lambert then addressed the House, his remarks having special reference to the present war and the activities of the Red Cross.\*

THE PRESIDENT: The next thing in order is the Report of the Council. There are no recommendations contained in this report. There is a report of a committee of the Council on the Counsel. What disposition do you wish to make of this report?

DR. HENRY S. STARK: I move that we dispense with the reading of all of these reports except the recommendations that are made therein, and that the reports be adopted as printed except the recommendations which shall be read to the House. Seconded.

DR. JAMES F. ROONEY: I move to amend that except where the reports contain recommendations, these recommendations shall be considered separately under the head of "New Business." Seconded.

DR. STARK: I accept the amendment.

The original motion as amended was put and carried. The report of the Secretary was called for, and the Secretary only read that part of his report, at the request of the President, in reference to Dr. Halsted, who acted as President during President Lambert's absence abroad.

It was moved that the report be adopted. Seconded and carried.

The Report of the Committee on Scientific Work was adopted as printed.

THE PRESIDENT: The Report of the Committee on Legislation contains recommendations, and these recommendations will come up under the head of "New Business."

The reports of the Committee on Arrangements, Committee on Public Health and Medical Education, Committee on Medical Research and Committee to

\* See page 217

Consider Redistricting the District Branches were accepted and ordered spread upon the minutes

THE PRESIDENT Committee to Revise Workmen's Compensation Laws

DR. ROONEY The Industrial Commission has requested that I present to the House of Delegates their desire to have a committee appointed from this body to sit with the Industrial Commission or with a committee from that commission and with a like committee from the Insurance Carriers in order to make the necessary proposed amendments to the law.

We recommend in our report that a committee be appointed by this House to sit with the Industrial Commission and with a committee appointed by the Insurance Carriers to revise workmen's compensation laws.

THE PRESIDENT This matter can be taken up later

The Secretary presented the following report from the Committee on Prize Essays

#### Report of the Committee on Prize Essays

The Committee on Prize Essays would respectfully report that but one essay for 1918 has been presented and for the Lucien Howe Prize

It is the unanimous opinion of your committee that this essay shows evidence of personal clinical observation, the pathological views appear to be in accord with the latest contributions, the English acceptable and the whole article shows an unusually complete study of the subject presented, therefore we would recommend that this prize amounting to \$100.00 be awarded to the gentleman signing himself 'Fiat Lux'

Upon opening the sealed envelope containing his card we find the Lucien Howe prize goes to Dr. Israel S. Wechsler New York and to which he is justly entitled

Respectfully

ALFRED VAN DER VEER Chairman  
EDWARD D. FISHER  
CHARLES G. STOCKTON

Dr. W. Stanton Gleason read the following memorial to Dr. Richard Giles, President of the First District Branch

#### In Memoriam

RICHARD GILES M.D.

Died January 19, 1918 while President of the First District Branch of the Medical Society of the State of New York.

Dr. Giles was one of nature's noblemen—dignified and unassuming firm in the cause of justice and the right, gentle and sympathetic in the appeal of the sick and afflicted. An esteemed officer of the Society has departed but the influences which radiated from his strong personality will always remain green in the hearts of his friends and colleagues. May this token of appreciation be engrossed on our minutes and the name of Dr. Giles be inscribed on the roll of our honored dead.

W. STANTON GLEASON

The reports of the Councilors of the First Second Fourth Fifth Sixth and Eight District Branches were accepted as printed and ordered spread upon the minutes.

THE PRESIDENT In the report of the Seventh District Branch there is a suggestion to this effect: That there be some changes made of the smaller county societies to permit of a more equitable representation in the State Council. No action taken.

Under the head of Unfinished Business the following amendments were considered

Amend the Constitution Article IV Section 1 by adding after the words 'In affiliation with the society' the words 'all ex-presidents of this society'

THE PRESIDENT What will you do with this amendment?

DR. WENDELL C. PHILLIPS I move that we do not approve of this amendment. Seconded and carried.

The Secretary read the following amendment

Amend the Constitution, Article V by adding the words 'The President and one Vice President of each District Branch shall be members of the Council of the Medical Society of the State of New York'

DR. HENRY L. WINTER I move that this amendment be not adopted. Seconded.

After discussion by Drs. Dougherty, Rooney and Winter, Dr. Rooney moved as a substitute that the amendment be adopted. Seconded.

After further discussion by Drs. Van Cott, Dougherty, Rooney and Davin the substitute was voted on and declared lost.

Motion of Dr. Winter was put and carried.

The Secretary read the following amendment

Amend the Constitution Article VII, Section 2 by substituting '\$400 for \$300 in the second line which will then read: The state annual per capita assessment shall be \$400 and shall be collected by the county treasurers at the same time and as a part of the county dues and shall be remitted to the state treasurer by the treasurer of each county society on or before the first day of June of each year.'

DR. JAMES W. FLEENING I move that this amendment be not adopted. Seconded.

After discussion by Drs. Van Fleet, Winter, Andrew Abbott, Wakeman, Crandall, Phillips and Berg the motion was put and carried.

The Secretary read the following amendment

Amend the Constitution, Article VIII by adding Section 3 as follows:

Section 3. In the interim between the sessions of the House of Delegates unless and except referred to it for action by the House of Delegates the Council shall order a general referendum vote in the manner prescribed in Section 1 of this Article on all important legislative and economic matters affecting the general welfare of the medical profession, and until and after decision by the members of the Society, the Council shall take no action on such matters.

DR. E. ELIOT HARRIS I move that this amendment be not adopted. Seconded.

After discussion by Drs. Van Cott, Phillips, Cranfill and Gottheil the motion was put and carried.

The Secretary read the following amendment

Amend the By-Laws Chapter III Section 1 by adding after the words 'Society' at 2 P. M. The Section will then read: The House of Delegates shall meet annually on the day before the annual meeting of the Society at 2 P. M.

DR. STARK I move that this amendment be not approved. Seconded.

After discussion by Drs. Harris and Stark the motion was put and carried.

DR. HARRIS There is a perennial motion under 'Unfinished Business' that will have to continue unless the Legislature makes a change and I therefore offer it again.

Action on notice presented at the last meeting to change time and place of annual meeting (See Constitution Article VI Section 1).

THE PRESIDENT We now come to the consideration of recommendations continued in reports of committees and the first recommendation is contained in the Report of the Committee on Legislation relative to the establishment of a bureau for the study of medical legislation. We will hear from Dr. Rooney.

DR. JAMES F. ROONEY The reasons for such a bureau are stated in the report. I therefore lay before this House the recommendation that a bureau for the collection of information to be utilized by the Com-

mittee on Legislation appointed by this body and its officers be considered

After discussion by Drs Phillips and W F Campbell, moved that this recommendation be referred to a committee of three to report to the House at the evening session. Seconded

Dr ROONEY I move to amend that the recommendations be referred to the Committee of the Whole. Seconded

Dr CAMPBELL I accept the amendment

The motion as amended was put and carried

The House then went into a Committee of the Whole. Dr E Elot Harris was chosen Chairman, and Dr Floyd M Crandall, Secretary

The Committee of the Whole rose, President Lambert took the chair and called the House of Delegates to order. The committee reported through its chairman the following

Moved by Dr George W Kosmak that the Council of the Medical Society of the State of New York be directed to establish before January 1 1919, a legislative bureau of information at Albany, and that the Council shall formulate appropriate rules and regulations for its government, and appropriate the necessary funds for the conduct of the same. Seconded

Dr HENRY L WINTER moved to amend by adding the words "provided that the funds necessary for such work are available". Seconded

The original motion as amended was carried by a vote of 77 to 20

It was moved that the report be adopted. Seconded and carried

On motion the House of Delegates adjourned to meet at 8 P M

### Evening Session

The House of Delegates reconvened at 8 P M, and was called to order by the President who stated that the first order of business was the further consideration of the report of the Committee on Legislation, particularly the recommendation on compulsory health insurance

Dr JAMES F ROONEY I move that this recommendation be considered with the report of the Committee on Medical Economics. Seconded and carried

THE PRESIDENT The next recommendation in the report is with reference to drug addiction

Dr ROONEY The recommendation is couched in rather general terms, for the reason that we have a new law on the statute books that radically changes the whole method of supervision of narcotic addiction in New York State. This law, in my opinion, is one of the best as concerns the medical profession and the public that has yet been passed by the Legislature. I make the recommendation that the House voices its exact position upon the matter of narcotic drug legislation

Dr John P Davin offered the following preambles and resolution

WHEREAS There is an increasing tendency among legislative bodies to pass laws of doubtful constitutionality, leaving it to those affected by these measures to prove their unconstitutionality in the courts. One of the latest of these laws recently passed was publicly pronounced to be of this character by the Governor of this state while affixing his signature to it. This is particularly true of measures relating to the Public Health supported or introduced by politically appointed medical officials of the state, and

WHEREAS These measures all compel increased burdens upon the taxpayers in the establishment of new commissions, bureaus and officials largely lay and legal in character and personal while incidentally limiting the legal rights of the practitioners of medicine and of their patients, therefore, be it

Resolved By this body that it formally and officially repeat and record the objections recently presented

by this society and other medical bodies before the Governor of this State at the hearing on the bill for a Commission of Narcotic Drug administration as revolutionary, unconstitutional and inimical to the welfare of those to whom we minister in the discharge of our obligation as physicians. Be it also

Resolved, That the counsel of this society be instructed to take measures to test the constitutionality of this law at such time and under such conditions as he may deem best suited to this purpose. Seconded

After discussion by Drs Rooney and Kindred, and remarks by Mr James Taylor Lewis, counsel for the society, Dr Henry S Stark moved that the resolution be laid on the table

Seconded and carried

Dr JAMES F ROONEY I move that the matter of narcotic drug addiction be referred to a special committee of five to be appointed by the president and report at the next meeting of this body. Seconded

Dr WENDELL C PHILLIPS I move as an amendment that we refer this matter to the new committee on legislation, expressing the opinion that the bill is iniquitous and should be repealed. Seconded

After discussion by Drs Laase and Kindred, the amendment was put and declared lost

The motion of Dr Rooney was put and carried

THE PRESIDENT The next order of business is the report concerning the recommendations of the Committee on Medical Economics, Dr Winter, Chairman. Dr Rooney has asked that a special committee be appointed by this body to sit with a committee of the industrial commission and a like committee of the insurance carriers to settle the question of workmen's compensation and health insurance. The Chair thinks it would be wise to include that recommendation in the report of the committee on Medical Economics

Dr ROONEY I move that the recommendation in my report concerning health insurance be discussed at the same time as the report of the Committee on Medical Economics

Seconded and carried

Dr HENRY L WINTER The Committee on Health Insurance and Social Insurance has given the subject considerable study. You will notice in the report that the first paragraph states that the committee is opposed to health insurance. These are our conclusions after having studied the subject as it has been presented so far. When this report comes before you for consideration, you will please not consider that as a recommendation to the society to go on record as opposed to health insurance. That is our conclusion regarding conditions as they exist to-day. We have made an effort to present four suggestions which we feel would assist us in health insurance bills that may be presented and be enacted into law. The bill which is presented in full as a part of this report is drawn for the purpose of furnishing grounds for argument on the subject of health insurance. We do not agree with the fundamental principles underlying the health insurance problem, and this bill is presented merely as an expression of the fact that there is another basis for health insurance which might be considered and which we feel has more value in it and is more just to all concerned than any bill yet presented. We ask that this matter be taken up by the House of Delegates, that the report be considered, that we get an expression of opinion from the members present, and that the matter be referred back to the committee on Medical Economics for further study. It is merely a tentative statement submitted for the reasons already stated

Dr WILLIAM S GOTTHEIL In accordance with the resolution adopted by the House of Delegates last year, I move that the first paragraph of the report of the Committee on Medical Economics be adopted. Seconded

After discussion by Drs Winter, Gottlieb Dougherty, Rooney, Berg, Glason, and O'Neill the motion of Dr Gottlieb was put and carried.

**THE PRESIDENT** The second portion of Dr Winter's report is that the whole subject be referred back to the committee for further study.

It was moved and seconded that the report be so referred. Carried.

**THE PRESIDENT** In the report of the Councilor of the Seventh District Branch there is a recommendation by Dr William M. Brown to the effect that districts be arranged according to the membership so that each councilor would have approximately the same number of members to represent.

**THE SECRETARY** That matter has been fully covered by the report of Dr Lytle's committee in reference to redistricting the district branches.

After discussion by Drs Gottlieb and Lytle a motion in favor of redistricting the societies according to the smaller county societies was voted down.

Dr Ward B. Hoag offered the following amendment to Article IV of the Constitution:

Strike out the words "each county society shall be entitled to elect to the House of Delegates as many delegates as there shall be state assembly districts in that county at the time of the election except that each county society shall be entitled to elect at least one delegate and except that whenever at the time of election the membership of a county society shall include members from an adjoining county or counties in which there shall be no county society in affiliation with this society such county society shall be entitled to elect from among such members as many additional delegates as there are assembly districts in the county or counties so represented in its membership."

Insert the words "The delegates shall be apportioned among the constituent societies in proportion to their actual active membership except that each constituent society shall be entitled to elect at least one delegate. The House of Delegates may from time to time fix the ratio of apportionment. (To lie over until next year.)"

Dr George W. Kosmak presented the following amendment to Chapter 7 Section 4 of the By-Laws:

Strike out the words "The Committee on Legislation shall consist of a Chairman to be elected by the House of Delegates and of the Chairmen of the Legislative Committees of the constituent county societies" and substitute the following:

"The Committee on Legislation shall consist of three members including the Chairman" (To lie over until next year.)

On motion of Dr Frederic E. Sondern seconded and carried Dr William P. Clothier, Buffalo, Dr Charles B. Tefft, Utica, and Dr Adolphus C. Meyersburg of Brooklyn were elected as retired members.

**THE PRESIDENT** The Chair desires to appoint a War Committee as requested by the American Medical Association to work in conjunction with the American Medical Association. There is also in this State a Council of National Defense for the same purpose and this committee is working in absolute harmony with the profession of this State. The Chair appoints Drs George D. Stewart and Frederic E. Sondern who are on the State Council of National Defense and Dr Crandall as Chairman of this committee.

Dr Sondern spoke of the work that the New York State Committee Medical Section Council of National Defense had done and was doing in the way of securing physicians to join the Medical Reserve Corps.

Dr Henry G. Hughes presented the following which was referred to the Committee on Medical Economics:

**Resolved** That the members of the Medical Society of the State of New York individually and collectively pledge themselves that in the event of the enactment

of any Health Insurance Law by the Legislature of the State of New York to demand and obtain for all medical and surgical services rendered by them the same fees for the same class of service as shall be in force in the city and county in the State of New York in which they have resided for the three years immediately prior to the first day of January of the year in which said Health Insurance Law shall take effect.

**Resolved** That any member of the Medical Society in the city and county of Schenectady or non member in good professional standing whether engaged in private practice or employed directly under the provisions of any Health Insurance Law who shall violate in letter or spirit the foregoing resolution shall be considered unprofessional and if a member of this Society shall after a hearing had and substantiation of such violation be expelled from the Society.

**Resolved** That any physician or surgeon employed by any fund or belonging to any Panel under the provisions of any Health Insurance Law who treats disease or operates on beneficiaries under such law and who takes receives or charges fees less in amount than for similar services performed in private practice shall be deemed guilty of unprofessional conduct.

[The purpose of this resolution is to prevent the direct employment of doctors by a fund for supervising purposes treating or operating on patients.]

**Resolved** That any physician or surgeon consultant or specialist who employs one or more physicians or surgeons consultants or specialists as assistant or assistants under any Health Insurance Law shall pay such assistant or assistants as compensation fees in amount equal to that which such assistant or assistants would receive were he or they in private practice and in no event shall the amount of such fees be less than the regular fees for similar work as provided for in resolution one above set forth.

[This resolution will prevent a physician or surgeon from turning other doctors and paying them a salary. If such unprincipled ones can make no profit there will be no incentive to engage in such transactions.]

**Resolved** That no member of this Society shall have any professional relations with such unprofessional physicians or surgeons nor shall he practice his profession in any hospital, sanitarium or other institution where any such unprofessional physicians or surgeons are permitted to practice.

[This is the only means but wholly sufficient we have to combat at once the law as a whole and also to deter and punish the man or woman who is a party to the attempted ruin of the profession. Lived up to this will nullify any law or laws that are not fair and just. The Profession asks for no more and will accept nothing less than justice and fair dealing.]

**Resolved** That each duly licensed physician and surgeon in good standing in his or her profession in the City and County of Schenectady and those absent therefrom in the service of the United States in the Army and Navy be asked to subscribe in writing their names to the foregoing resolutions.

[This will prevent the subscriber from repudiating his word of honor for what may look to him like an opportunity to get ahead of his fellow. He can not go back on his signature.]

**Resolved** That the delegates of this Society to the State Medical Society be instructed to use their best endeavors to have the foregoing resolutions adopted by said Society at its next annual meeting.

Dr Charles G. Stockton presented the following preamble and resolution:

**PREAMBLE** The higher requirements demanded by state regulation for medical practice had reduced the number of qualified physicians below the actual needs of the country even before the war. Since then that minimum number has been greatly reduced and the reduction will doubtless continue while the war lasts—our youngest and ablest men being needed for the

service The loss of man-power which the country must inevitably suffer makes necessary the highest possible conservation among those who remain

Physical efficiency is lost in several ways ignorance of the causes and possible prevention of disease, neglect of known measures of prevention, inability to secure prompt and skillful treatment, *including the essentials for correct diagnosis*, in the beginning

It clearly becomes the duty, therefore, of the medical profession, the public health officials, employers of labor, social workers and the heads of all organized efforts to cooperate in securing the greatest possible degree of health in the community

This is essential for economic if for no other reason. It is essential for the comfort and peace of mind of our soldiers who have left their families and gone to the front It is essential for the future welfare of the world

Working individually, we cannot get and keep whole communities up to the highest standard of healthy working efficiency Working cooperatively, it becomes possible, with no loss to the individual practitioner and immeasurable gain to the world

*Resolved*, That a committee be appointed by the House of Delegates of this society to consider whether a plan may not be devised by which these needs can be met in this State, and that the delegates from this society to the American Medical Association be requested to present the same subject before the House of Delegates of the American Medical Association for the consideration of that body for the purpose of extending the inquiry to include the national limits and the determination, if possible, of measures for the betterment of present conditions

After presenting the resolution Dr Stockton moved that a committee of five be appointed by the president to carry out the ideas expressed in the resolution *Seconded and carried*

Dr Julius Richter presented the following preambles and resolutions

WHEREAS, At a special meeting of the Buffalo Academy of Medicine, which was called April 24, 1918, to consider the recent action of the American Red Cross in revoking its decision to appropriate money for animal research work, and in allowing individual generosity to refund that already expended and also to supply funds for the continuance of the work, and

WHEREAS The attention of the Buffalo Academy of Medicine was called to this matter by a statement issued by Harvey D Gibson General Manager of the American Red Cross, which appeared in the New York Times, April 11, 1918 Therein Mr Gibson explained briefly that the Red Cross first decided to undertake animal experimentation, "upon the recommendation of army medical officers and a number of eminent scientists in this country", that prompt action was necessary and that the use of money in this way was proper from the Red Cross point of view, because it would be difficult to imagine any more important duty upon the Red Cross than to seek for any means of prevention and remedy for sickness among soldiers But he lastly stated that "the Red Cross does not believe it should take action either for or against animal experimentation", and

WHEREAS, After a careful consideration and thorough discussion of this action of the American Red Cross, the Buffalo Academy of Medicine by unanimous vote appointed a committee with instructions to prepare a strong protest against what it believes to be an ill-advised action and

WHEREAS If the original decision of the Red Cross to appropriate money for animal research was wise the reasons for its change of policy are weak and unconvincing, and

WHEREAS, The Medical Society of the County of Erie instructed its delegates to the 112th Annual Meeting of the Medical Society of the State of New York to present a resolution embodying this report before the House of Delegates, and

WHEREAS, the aforesaid report, which for brevity, logic and well-chosen words is most appropriate,

*Therefore, be it Resolved*, That the report of the Committee appointed by the Buffalo Academy of Medicine is the sentiment and attitude of the Medical Society of the State of New York at its 112th Annual Meeting in Albany convened, and is a part hereof, and

*Be it further Resolved*, That the Delegates from the Medical Society of the State of New York to the American Medical Association meeting in Chicago in June, 1918, be and hereby are instructed to present this resolution to the House of Delegates of the American Medical Association

DR FREDERIC E SONDERN I move that these resolutions be laid upon the table

*Seconded and carried*

Dr John V Woodruff offered the following resolution, which was referred to the Committee on Medical Economics

Recognizing the inalienable right of the individual to choose his surgeon in case of injury, be it, therefore,

*Resolved*, That it is the desire of the Medical Society of the County of Erie that the present compensation law be so amended as to deprive employers of the legal right to choose a surgeon for their injured employees

Dr John V Woodruff presented the following amendment to Chapter 7, Section 4, of the By-Laws

Each district branch may adopt a constitution and by-laws for its government, provided that the same shall first be approved by the council of the society Amend to read that each district branch may adopt a constitution and by-laws for its government, provided that the same shall first be approved by the society, except that it shall have a free hand in dealing with members addicted to practices considered not strictly professional in their methods of practice (To lie on the table until next year)

Dr William S Gottheil offered the following resolution, which was adopted

*Resolved*, That in accordance with the expressed wish of the organized medical profession of the state, the delegates of this society to the House of Delegates of the American Medical Association be instructed to oppose the scheme for compulsory health insurance in every legitimate way

Dr C F J Laase presented the following preambles and resolution, which were referred to the Committee on Medical Economics

WHEREAS, The evidence adduced by the hearings of the Joint Legislative-Committee for the investigation of so-called habit-forming narcotic drugs, together with all other recent authoritative information has conclusively shown that the narcotic drug addict is suffering from a definite disease produced by the constant use of narcotic drugs, and

WHEREAS, Said evidence and said information have conclusively demonstrated that there is at present no place or institution where certain and definite and positive cure may be obtained, and

WHEREAS, All competent and authoritative medical observers are definitely agreed that lack of deprivation of the drug of addiction projects the narcotic addict into agonizing and excruciating pains and sufferings, physical and mental, together with prolonged economic incapacity and social degradation, and

WHEREAS, Competent and authoritative medical observers have conclusively shown that the administration of the drug of addiction is the only therapeutic measure capable of controlling these pains and sufferings and of maintaining the addicted sufferers in a condition of social and economic competency, and

WHEREAS, It has been conclusively shown by competent and authoritative medical observers and by exhaustive testimony from lay experience and by preponderating evidence from officials charged with the administration of narcotic drug laws, that until more effective methods of treatment for the final cure of

addiction shall be in more general use by physicians and medical institutions a continued supply of narcotic drugs to the extent therapeutically indicated by and necessary for the control of the symptomatology of physical narcotic drug need is an unavoidable necessity, and

WHEREAS, It has been conclusively shown that the illicit and illegitimate traffic in narcotic drugs and criminal exploitation of the narcotic drug addict now existing are the direct result of the refusal of the medical practitioner to treat the narcotic drug addict and of the refusal to supply the addict with the medical and necessary narcotic medication and

WHEREAS The Joint Investigating Committee of the State Legislature in its report adopted by the Legislature specifically declares "Any member of the medical or pharmaceutical professions who refuses either to prescribe or to dispense narcotic drugs to the honest addict to alleviate the pains and sufferings occasioned by lack of narcotics, is not living up to the high standards of humanity and intelligence established by these great professions" therefore, be it

Resolved, that the Medical Society of the State of New York does now declare that the practitioner of medicine who is so treating and branding a narcotic drug addict as to make such addict a self supporting member of society and who is treating and handling such addict just exactly as that physician would care for any other patient prescribing or supplying opiate medication to meet therapeutic indications "addiction or otherwise to the best of the physician's medical skill and ability" honestly humely without unjustifiable or other exploitation is practicing medicine in good faith for the benefit of the patient and in the best interests of the community and shall receive the full moral and other encouragement and support of this society

Dr Albert T Lytle offered the following amendment to the Constitution "That the time of the annual meeting shall take place the first week in May (To be over one year)"

In order to curtail the expenses of the society after considerable discussion it was moved that the publication of the directory be discontinued during the duration of the war. Seconded

Dr Eliot Harris moved that this matter be laid on the table. Seconded and carried

On motion the House of Delegates adjourned until 9 A M Tuesday

FLOYD M CRANDALL Secretary

## ADJOURNED MEETING OF THE HOUSE OF DELEGATES

The adjourned meeting of the House of Delegates was called to order by the President at 9 A M

The Secretary called the roll and the following delegates responded Charles F Myers Arthur G Root Joseph L Bendell Chauncey R Bowen Edmund E Specht Nathan B Van Etten J Levi Amster Thomas H Curtin Maximilian Zigler Edward Torres Louis F O'Neill Vernon W Griswold J William Morris Charles F Abbott Frank C Nixon Aaron Sobel Irving D McKay George T Cott Julius Richter Charles G Stockton Harry R Trick John A Woodruff James E King Fred A Mendlein John W Blackett Robert I Ellithorp Percy G Waller Adelbert C Douglass Gilbert D Gregor William F Campbell Robert E Coughlin Jamie W Fleming Onslow A Cordon Edwin A Griffin George D Hamlin James C Hinecock O Paul Humpstone William A Pisciari Mary F Potter John J Sheehy Henry F Brunning Charles M Fisher Harvey B Matthews William Pfeiffer William T Sharran Nelson O Brooks Clarence V

Costello Owen E Jones Bradford A Richards Floyd S Winslow B J Duff Richard R Canni Theodore H Allen Henry W Berg George Barrie John P Drvin Daniel S Dougherty, Ten Eyck Elmendorf William S Gottheil E Eliot Harris Ward B Hoag, James Pedersen Malcolm Rose George W Kosmick Christin F J Laase J Milton Mabbott Rosalie S Morton Wendell C Phillips Alfred C Prentice, Henry S Stark Howard C Taylor Orrin S Wightman, John VanD Young Frank C Leomans, Edward M Hyland Thomas Z Jones G Masillon Lewis Frederick H Flaherty Albert E Larkin Edward J Wynkoop Malcolm S Woodbury, W Stanton Gleason Walter H Kidder Julian C Smith Thomas C Chalmers Guy T Cleghorn John J Kindred Harry W Carey Christopher J Patterson, E Warren Presley William G Cooper G Scott Towne Henry G Hughes Frederick C Reed Henry R Bentley, John M Quirk Bertis R Wakenin Frank Overton George M Cady Luzerne Coville, Henry Van Hoevenberg Benjamin J Singleton John F Myers Merritt W Birnum, William H Cantle Charles Ogilvy William H Purdy Elton G Lutell, Mary T Greene Frederick F Malony

The following officers and chairmen of committees were present Alexander Lambert President Thomas H Halsted First Vice President Albert Warren Ferris Second Vice President Marcus T Heyman, Third Vice President Floyd M Crandall Secretary, Frank Van Fleet Treasurer James F Rooney, Chairman Committee on Legislation, Arthur J Bedell Chairman Committee on Arrangements Henry Lyle Winter Chairman Committee on Medical Economics Joshua M Van Cott Chairman Committee on Public Health and Medical Education Frederic E Sondern Chairman Committee on Medical Research, also the following Councilors Joseph B Hulett First District Branch Luther Emerick Third District Branch Arthur W Booth Sixth District Branch Albert T Lytle Eighth District Branch

The President stated that invitations had been received from Rochester and Syracuse to hold the next annual meeting in one of those cities

The election of officers being the next order of business Dr Daniel S Dougherty moved that nominating speeches be limited to three minutes and speeches seconding nomination to three words. Seconded and carried

Dr Frederick H Flaherty nominated for President Dr Thomas H Halsted of Syracuse Dr Owen F Jones nominated Dr Wesley T Mulligan of Rochester Dr Arthur J Bedell nominated Dr James F Rooney of Albany

These nominations were seconded by several delegates The President appointed six tellers Drs Booth Stark Coville and Barris

Of 101 votes cast Dr Halsted received 37 Dr Mulligan 41 and Dr Rooney 23

The House then voted on the two nominees receiving the highest number of votes on the first ballot On the second ballot 106 votes were cast of which Dr Halsted received 61 and Dr Mulligan 45

Dr Halsted was declared duly elected President of the Society

It was moved that Dr Halsted's election be made unanimous. Seconded and carried

The following officers were nominated and declared duly elected

First Vice President Dr James F Rooney Albany Second Vice President Dr Marcus T Heyman New York Third Vice President Dr William M Dunning New York Secretary Dr Floyd M Crandall New York Assistant Secretary Dr Edward Livingston Hunt New York Treasurer Dr Frank Van Fleet New York Assistant Treasurer Dr Harlow Brooks New York

Chairman Committee on Scientific Work Dr Parker Syme New York Chairman Committee on Public

Health and Medical Education, Dr Joshua M. Van Cott, Brooklyn, Chairman, Committee on Legislation, Dr Frederick C. Conway, Albany, Chairman, Committee of Arrangements, Dr Dwight H. Murray, Syracuse, Chairman, Committee on Medical Economics, Dr Henry Lyle Winter, Cornwall, Chairman, Committee on Medical Research, Dr Frederic E. Sondern, New York, Committee on Prize Essays, Drs Albert Vander Veer, Chairman, Edward D. Fisher and Charles G. Stockton.

The following were elected delegates and alternates to the American Medical Association: Dr James W. Fleming, Brooklyn, Dr Dwight H. Murray, Syracuse, Dr Frederic E. Sondern, New York, Dr George W. Kosmak, New York, and Dr Arthur J. Bcdell, Albany. Alternates: Dr Charles F. Stover, Amsterdam, Dr Nelson O. Brooks, Oneida, Dr George F. Cott, Buffalo and J. Lewis Amster, New York.

**THE PRESIDENT** The selection of the place of meeting for next year is in order.

**DR JAMES W. FLEMING** I move that the next meeting of the Society be held at Syracuse. Seconded and carried.

**THE PRESIDENT** The selection of the date of the meeting is now in order.

**DR HENRY S. STARK** I move that the date of the meeting be left to the council. Seconded and carried.

**DR ROONEY** With the permission of the House, I would like to rescind my motion for the appointment of a special committee to sit with a committee of the Industrial Commission, and have the Committee on Medical Economics designated as the Committee for this work. Seconded and carried.

**THE PRESIDENT** The Committee on Medical Economics will be the committee which will confer and sit with the Industrial Compensation Committee to consider questions that come before them. A motion to that effect is in order.

**DR DANIEL S. DOUGHERTY** I so move. Seconded and carried.

**DR WENDELL C. PHILIPS** I move that this House of Delegates extend a hearty vote of thanks to the medical profession of Albany for the gracious manner in which they have received and cared for the delegates during this meeting. Seconded and unanimously carried.

As there was no further business to come before the meeting on motion of Dr Stark, which was duly seconded and carried, the House of Delegates adjourned *sine die*.

FLOYD M. CRANDALL  
Secretary

## County Societies

### MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON

REGULAR MEETING SONIEA, TUESDAY, MAY 7, 1918

The President Dr E. V. Foster, called the meeting to order, and the minutes of the last meeting were read and approved. A number of communications relative to the proposed Health Insurance Law were read by the Secretary, and after discussion, the following resolution was unanimously adopted:

*Resolved*, That the Delegates from this Society to the Medical Society of the State of New York, be and are hereby instructed to oppose the scheme for Compulsory Health Insurance in the State Society, and be it further

*Resolved*, That they be directed to introduce and support a resolution in the House of Delegates of the State Society instructing the Delegates from the State Society to the House of Delegates of the American Medical Association, in accordance with the expressed opinion of the organized medical profession, to oppose the scheme for Compulsory Health Insurance in every way possible.

The following resolution was also adopted unanimously:

*Resolved*, That the Medical Society of the County of Livingston places its approval on the Owen Bill and the Dyer Bill now before the Congress of the United States and seeks the approval of the Senators and Representatives from New York State for these measures.

The Secretary was instructed to inform the two United States Senators and the Representative in Congress from this District as to the action of the Society, relative to increased rank for Medical Reserve Officers. The Secretary also read the communication from the Council of National Defense relative to a formation of the Voluntary Medical Service Corps. The members of the Society and visitors were the guests at luncheon of the Craig Colony for Epileptics. The scientific session held after luncheon consisted of Reports of Cases by Drs. Driesbach, Foster, Leach, Burke, Burt, Bowen and Collier. Upon the invitation of Dr. Driesbach, the Society decided to hold its next meeting in July, at Dansville. The Society had as guests a large number of the Commissioned Personnel of Base Hospital No. 13, located at Dansville, Base Hospital No. 13 occupying the buildings formerly used as the Jackson Health Resort.

### MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN

SEMI-ANNUAL MEETING SARANAC LAKE,  
TUESDAY, MAY 14, 1918

Following a meeting of the Comitia Minora at 11:30, the society was called to order by the President, Dr. William N. Macartney at 12 o'clock.

The minutes of the last meeting and the report of Comitia Minora were read and approved.

Members present: Drs. W. N. Macartney, G. M. Abbott, L. Brown, R. M. Brown, H. McL. Kinghorn, J. W. Blackett, R. C. Paterson, E. R. Baldwin, F. H. C. Heise, J. Cone, P. F. Dalphin, C. C. Trembley, J. A. Farrell, F. W. McCarthy, A. L. Rust, J. E. White and H. J. Blankmeyer, Jr.

Among the visitors present were Dr. Halsey J. Ball of Glens Falls, Sanitary Supervisor of this district, S. A. Petroff and H. L. Sampson, of Trudeau, and S. H. Parker, of Hartford, Conn.

Drs. John W. Kissane and Henry J. Blankmeyer, Jr., were elected to membership.

A communication from the Secretary of the Medical Society of the State of New York, was read, stating that the amendment to our by-laws to change the date of our annual meeting from the second Tuesday of December to the second Tuesday of November in each year was approved by the Committee on By-Laws of the Council.

The following officers to be elected at the next annual meeting, were nominated: For President, Dr. John A. Grant, Malone; Vice-President, Dr. Sidney F. Blanchet, Saranac Lake; Secretary and Treasurer, George M. Abbott, Saranac Lake, for Censor for three years, Dr. John E. White, of Malone.

The Treasurer reported that the society had \$100, with interest since April 1, 1916, in the Albany Savings Bank, and suggested that the society invest this in the next Liberty Bond Loan. After some discussion it was moved, seconded and carried, that the Treasurer be instructed to invest \$100 in the name of the Medical Society of the County of Franklin in Liberty Bonds.

The matter of increasing the state per capita assessment, according to an amendment offered at the last annual meeting of the state society, to Sec. 2, Article VII of the constitution of the state society to increase the state assessment from three to four dollars, was taken up. After some discussion it was moved, seconded and carried that after conferring with other delegates and listening to the discussions on this mat-

ter that our delegate use his own judgment in voting for or against it.

At 1:30 the meeting adjourned to the Berkeley Hotel, where twenty one members and their guests sat down to dinner.

The scientific session was called to order at 3 o'clock by the President.

Dr Halsey J. Ball addressed the meeting on sanitation and preventive medicine especially as regards scarlet fever.

Pneumonia and Appendicitis by P. F. Dalphin, M.D., Malone.

Appendicitis and Pneumonia by J. E. White, M.D., Malone.

Discussion followed by Drs R. M. Brown, J. A. Blackett and the President.

Tuberculosis Examinations in the Army Dr E. R. Baldwin, M.D. of Sarinac Lake.

Discussions by Drs H. McI. Kinghorn, L. Brown and H. J. Blankmeyer, Jr.

Tuberculosis of the Sacro Iliac Joint by R. C. Paterson, M.D. Sarinac Lake.

Discussion by Drs H. McI. Kinghorn, L. Brown and F. R. Baldwin.

The meeting adjourned at 4:30 P. M.

## MEDICAL SOCIETY OF THE COUNTY OF ERIE

REGULAR MEETING, BUFFALO MONDAY APRIL 15 1918

The meeting was called to order in the Buffalo Medical College by the President George F. Cott.

The Secretary read the minutes of the last regular meeting held on February 18 1918 also the minutes of the Council meetings held March 13 March 23 and April 11 All of which were approved is read.

Dr Bonnar Chairman of the Board of Censors made a verbal report.

Dr H. W. Cowper Chairman of the Committee on Legislation briefly outlined the activities of his committee during the past two months and gave a prospective outline of some further work which his committee proposes to lay before the Society and which would require an appropriation in order to carry it out.

On motion of Dr Lytle the report was accepted and the appropriation asked for granted.

Dr Woodruff, Chairman of the Committee on Economics, reported on the activities of his committee and also outlined some work which his committee contemplated doing and which would require an appropriation to carry out.

Dr F. Park Lewis moved that the sum of \$25.00 be appropriated for the use of the Committee on Economics. The motion was carried.

The Secretary presented a communication and resolution from the Medical Society of the County of Schenectady, relative to the Health Insurance Law. The communication was received and filed and the Secretary directed to acknowledge the receipt.

Dr W. F. Jacobs Chairman of the Committee on Membership was unable to remain at the meeting and the Secretary therefore presented the applications for membership as recommended by the Committee on Membership through Dr Jacobs as follows: Willis B. Harrison Raymond George Laport Clarence Kummer Frederick W. Palmer George M. Oppermann.

All of these were duly elected to membership in the Society.

President Cott then presented Dr Lewis Fisher of the University of Pennsylvania Hospital Philadelphia who gave a very interesting address on "The Value of Internal Ear Tests to the General Practitioner" illustrated by lantern slides and moving pictures also demonstrations on living subjects.

This address was followed by a lively discussion participated in by a number of physicians present. At

the conclusion a vote of thanks was tendered on motion of Dr Bissell to Dr Fisher for his very able, interesting and instructive address.

Dr T. H. McKee introduced the following resolution which was unanimously adopted.

**Resolved** That the delegates of the Medical Society of the County of Erie and the Medical Society of the State of New York are hereby instructed to introduce a proposition and support it by every means in their power to secure an appropriation for the purpose of public propaganda under appropriate control for the purpose of educating the public to a better understanding of the value and import of animal experimentation past and present to scientific research achievement.

At the close of the meeting a collation was tendered the Society in the College Library.

## MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON

SPRING ANNUAL MEETING GREENWICH  
TUESDAY MAY 14 1918

The meeting was called to order at 11 A. M. Members present: Doctors Orton Budlong Paris Banker Millington Sullman McKenzie Oatman Park Pashley Blackett Leonard Heath.

Visitors: Dr John B. Harvey of Troy Dr Frank F. Gow of Schuylerville and Dr I. Johnston of Troy.

The reports of the Secretary and Treasurer were read and received.

The Treasurer reported \$82.87 in treasury and eight members to pay dues.

The President reported attending a hearing before the committee at Albany on the Health Insurance Bill. He thought the Doctors had the best of the discussion the Bill was not reported out of committee.

The following resolutions were adopted.

**Resolved** That the Secretary and Treasurer be a committee to purchase a service flag and that the Treasurer be empowered to pay the bill.

**Resolved** That Dr Orton be appointed Alternate for Dr Munson as Delegate to the State Society.

Adjourned for Dinner.

The Committee on Resolutions on death of Dr Fryer reported.

**WHEREAS** In the death of Dr Olin J. Fryer our Society has lost a useful and esteemed member and one whose fellowship we had enjoyed and

**WHEREAS** By his skillful and conscientious work as a physician he has contributed abundantly to the relief of suffering in his community and by his personal qualities had always merited and received the friendship and regard of our members therefore be it

**Resolved** That in recording his death we give expression to our appreciation of his excellent qualities as a physician and of our deep regret that death has ended a career that had contributed so much to the service of humanity and held promise of so much future usefulness be it further

**Resolved** That a copy of these resolutions be spread upon the minutes of the Society and a copy sent to the family of the deceased member.

(Signed) JOHN MILLINGTON  
LEWIS R. OATMAN  
ELMER E. MOSIER Committee

Dr Pashley moved that the Secretary write the State Council regarding the matter of fees for luncheon examinations. Adopted.

## SCIENTIFIC PROGRAM

Vice-President Budlong presented a case of Raynaud's disease and gave the history of the disease and the various theories as to the etiology. A vote of

thanks was tendered the doctor for his interesting paper and for presenting the case

Dr Heath read a paper on preventive medicine as practiced in our State Prisons. He stated that a large percentage were of foreign birth, alcoholic drug addicts, and infected with syphilis and tuberculosis, and yet the death rate was much lower than in the same classes outside. He thought one reason was the early recognition and treatment of diseases. Dr Heath was voted a vote of thanks for his paper.

Dr John Harvie of Troy read a paper on Carcinoma of the Breast. He emphasized the importance of early diagnosis and removal, the operation to include all the lymphatic glands in the axilla and sub-clavicular space. Dr Harvie was given a rising vote of thanks.

Dr Pashley presented an unusual case of Typhoid

## Section Officers Elected May 22, 1918.

*Medicine*—Malcolm Sumner Woodbury, Chairman, Clifton Springs, John Ralston Williams, Secretary, Rochester

*Surgery*—Arthur W. Booth, Chairman, Elmira, Claude C. Lytle, Secretary, Utica

*Obstetrics and Gynecology*—H. Dawson Furmss, Chairman, New York City, Thomas P. Farmer, Secretary, Syracuse

*Eye, Ear, Nose and Throat*—James Francis McCaw, Chairman, Watertown, Arthur Joseph Bedell, Secretary, Albany

*Pediatrics*—Frank vander Bogert, Chairman, Schenectady, Robert Sloan, Secretary, Utica

*Public Health, Hygiene and Sanitation*—William G. Bissell, Chairman, Buffalo, William Joseph Denno, Secretary, Albany

## Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

*LESSONS FROM THE ENEMY—HOW GERMANY CARES FOR HER WAR DISABLED.* By JOHN R. McDILL, M.D., F.A.C.S. Major Medical Reserve Corps, U.S. Army (Medical War Manual No. 5). 262 pp., illustrated. 16mo. Philadelphia and New York, Lea & Febiger, 1918. \$1.50.

*LABORATORY METHODS OF THE UNITED STATES ARMY.* Compiled by the Division of Infectious Diseases and Laboratories, Office of the Surgeon-General, War Department, Washington, D.C. (Medical War Manual No. 6). 256 pp., illustrated. 16mo. Philadelphia and New York, Lea & Febiger, 1918. \$1.50.

*THE MEDICAL CLINICS OF NORTH AMERICA.* Volume I, No. 5 (The Chicago Number, March 1918). Octavo of 241 pages, 35 illustrations. Philadelphia and London, W.B. Saunders Company, 1918. Published Bi-Monthly. Price per year: Paper, \$10.00, Cloth, \$14.00.

*SYPHILIS AND PUBLIC HEALTH.* By EDWARD B. VEDDER, A.M., M.D. Lieut-Col Medical Reserve Corps, U.S. Army. 315 pp. 12mo. Philadelphia and New York, 1918. Cloth, \$2.25.

*MEDICAL SERVICE AT THE FRONT.* By Lieut-Col JOHN MCCOMBE, C.A.M.C., and Capt A.F. MENZIES, M.C., C.A.M.C. 128 pp., illustrated. 16mo. Philadelphia and New York, Lea & Febiger, 1918. Cloth, \$1.25.

## Book Reviews

*DETAILS OF MILITARY MEDICAL ADMINISTRATION,* by JOSEPH H. FORD, B.S., A.M., M.D., Colonel Medical Corps, U.S. Army. With thirty illustrations. 741 pp. Published with the approval of the Surgeon-General, U.S. Army. Philadelphia, P. Blakiston's Son & Co., 1918. Price, \$5 net.

This book, written for the instruction of the members of the Medical Reserve Corps on active duty, is a volume containing valuable information. When the practitioner of civil life enters the Medical Reserve Corps and is assigned to active duty, he learns that, in addition to the medical care of patients, there is much else which must be understood. He recognizes himself as one small part of a huge organization, and must observe those forms of procedure which are insisted upon by this great machine. The author has collected not only all rules and orders concerning military medical administration but also other information necessary to every physician who has entered the military service of the United States. Colonel Ford has succeeded in bringing within the covers of one volume the details of the administrative part of military medicine, together with his justification of the necessity of so much so-called "paper work."

The duties of the men and the officers are carefully explained and the relationship of each individual to the organization is shown. The different details of medical aid in active warfare, as the ambulance company, the dressing station, the casualty clearing station, the field hospital, the base hospital, hospital trains and hospital ships, are most minutely reviewed and much valuable information given. The Public Health Service is recognized in its valuable work and the chief points of its relation to general health and sanitation presented.

An appendix of nearly two hundred pages explains and illustrates the many forms used in the administrative work in official communications.

This work is a most complete and accurate compilation of the many rules and orders affecting the medical officer in the service, and as a ready reference book in time of trouble should be used by those wishing to become proficient in the medical branch of the Army.

HENRY M. MOSES, Major, M.R.C.

*THE IMMEDIATE CARE OF THE INJURED.* By ALBERT S. MORROW, A.B., M.D., Clinical Professor of Surgery in the N.Y. Polyclinic, Attd Surg to Workhouse Hospital and to the Central and Neurological Hospital, Major, Medical Dept Officers Reserve Corps of the U.S. Army. Third edition thoroughly revised. Phila and London, W.B. Saunders Co. 1917. 349 pp. Cloth, \$2.75.

This volume is a valuable book as a first aid text to laymen and should be in every tourist's kit or those likely to come in contact with accidents of every kind. The book is very comprehensive as it gives an anatomical and physiological outline easily intelligible to the layman as a working basis for what follows later in the book. The author discusses the vascular and lymphatic systems, the respiratory, digestive, excretory, and nervous systems. Bandaging, dressings, medication, antiseptics, hemorrhage, and wounds are clearly outlined as to symptoms and treatment. The latter part of the book is devoted to fractures, dislocations, and sprains. An interesting chapter is devoted to first aid military surgery and the subject of poisoning with its treatment and symptomatology. The book can be well recommended as a text for the many who have recently gone in for first aid treatment. The style is clear and concise and the book is well written.

B. E. WOLFERT

**MILITARY ORTHOPAEDIC SURGERY** Prepared by the Orthopaedic Council (Medical War Manual No 4) Illustrated Philadelphia and New York Lea & Febiger, 1918 240 pages pp 16mo Price, \$1 50

As the title indicates, this small hand book has been compiled as a ready guide for the use of orthopaedic surgeons in Service. It does not cover the entire scope of orthopaedic surgery, but in its specific field it is practical in classification in definitions and distinctions and in treatment of abnormalities and deformities found in the soldier and as the result of war injuries. The important subject of foot disabilities is covered fully and for clearness of statement is better presented than in most text books. The adopted military shoe is described. Spine and joint injuries are considered from the viewpoint of war. The surgical and mechanical care of disabilities following nerve injuries fills an interesting chapter. The recognition by the Surgeon General of the Army of the valuable contribution of orthopaedic surgeons to the treatment of ununited and malunited fractures and the apportionment of this field of surgery to the orthopaedic specialist is met in this book by an excellent chapter on the subject. It is followed by one on bone grafting. The last chapter deals with war needs in methods of splinting and in devices for fixing disabled parts. Very ingenious are some of the plans for affording fixation and yet allowing free exposure of open wounds of bones and joints. There follow blank pages for field surgeons' notes and then three supplements on additional methods of fixation and of apparatus adapted from the manual prepared by the Board of Medical Officers in France. The illustrations throughout are crude but adequate. The book is strongly bound and of a size convenient for a side pocket. Like the 'Liberty Motor' the formation of this book is the result of the combined efforts of some of the leading American specialists in their respective fields working intensively to adapt from their general experience a product suitable to a specific need. In the case of this manual, the experience and writing of Col Sir Robert Jones, Director of Military Orthopaedics in the British Army have been freely used and frankly acknowledged. There is much in the book of value to the worker in industrial and civil practice.

WALTER TRUSLOW

**POST GRADUATE MEDICINE** Prevention and Treatment of Disease by AUGUSTUS CULLE, M.D. F.A.C.P. Fellow American Medical Association and N.Y. Academy of Medicine Member and Ex-President American Pediatric Society Emeritus Professor Medicine and Consulting Pediatricist N.Y. Post Graduate Medical School and Hospital Visiting Physician German Hospital Profusely illustrated D. Appleton & Co. New York and London 1918 1023 pp Cloth \$6 50

If any man in America is qualified to write on post graduate medicine it is Professor Culle with his thirty years' experience in teaching graduate students. A feature of this work which strikes one at the very outset is the clear and complete way in which is described the technique of the various tests and therapeutic measures enumerated.

Further the author is not afraid to express his views on the merits of various drugs or lines of treatment thus lending to the reader exactly what he desires namely the opinion of a clinician of standing regarding the many diverse and opposite forms of treatment of a given disease. Many of these monographic treatises are a mere setting forth of a list of views and methods of treatment none of which is original and none of which is singled out as preferred by the writer but here the writer's individuality fairly bristles out of every page.

If any fault may be found with this particular work

it is that common to all one volume works attempting to cover broad subjects or fields of study—a brevity in dealing with some matters which amounts almost to abruptness.

W. H. DONNELLY

**A TEXT-BOOK OF THE PRACTICE OF MEDICINE** By JAMES M. ANDERS, M.D. Ph.D., LL.D. Professor Medicine and Clinical Medicine, Medical-Chirurgical College Graduate School University Pennsylvania, thirteenth edition thoroughly revised with the assistance of JOHN H. MUSSER, JR., M.D. Associate in Medicine University Pennsylvania Octavo 1259 pages fully illustrated Philadelphia and London W. B. Saunders Company 1917 Cloth, \$6 net, half morocco \$7 50 net

Any work on the practice of medicine written for the medical student and used by the practitioner as a reference book of which thirteen editions have been published needs no comment by the reviewer concerning the value of the book. The author in the thirteenth edition of this excellent book has retained the valuable features of the earlier editions. He has eliminated some of the parts of less importance in order to make room for the more recent discoveries and treatments in medicine. The lessons of the present war have been incorporated in this edition as the present ideas of serum and vaccine therapy as modified by the present conditions, the treatment of pneumonia and of tetanus. The results of the recent work on renal function tests are reviewed and the estimation in diabetes of the blood fats and the alkalinity of the blood are to be found in this edition. The chapter on the diseases of the spleen has been rewritten because of the work upon this organ during the past two or three years and we have presented the present views of the nemias and allied conditions. The work on pellagra has been brought up to date and is most instructive in view of the prevalence of this disease in the United States. The importance of the proper care of the teeth and gums is impressed upon the student in relation to those diseases caused by the absorption of harmful organisms.

This book is valuable not only to the medical student but will be of much use to the practitioner who consults such a book for reference. It contains much valuable information presented in an instructive manner. The paper and typographical work is up to the usual standard of the publishers.

HENRY M. MOSES

**THE PRACTICE OF PEDIATRICS** By CHARLES GILMORE KERLEY, M.D. Professor of Diseases of Children New York Polytechnic Medical School and Hospital Second Edition revised and reset Octavo of 913 pages 136 illustrations Philadelphia and London W. B. Saunders Company 1918 Cloth \$6 50 net

On account of the progress in Pediatrics it has been found necessary to add twenty five new articles and rewrite sixteen chapters besides substituting more modern material for a great deal of old material which has been removed.

This makes a book of 913 pages printed on good paper typographically good and with clear illustrations. One wishes that the author had not marred the many pictures by so much printing on the pictures themselves but had used the arrow method of indicating important points instead.

The table of contents shows the following: 'The New-Born—Nutrition—Growth—Examination and Diagnosis—Care of Acute Illness—Diseases of the New-Born—Diseases of the Mouth and Oesophagus—Diseases of the Stomach Intestines and Peritoneum—The Rectum and Anus—The Spleen and Liver—Diseases of the Respiratory Tract—Diseases of the Heart—The Blood and Blood Diseases—The Glandular System—The Urogenital System—Nervous Disorders—Diseases

of the Skin Diseases of the Ear The Transmissible Diseases Unclassified Diseases Miscellaneous Subjects Suggestions in Management Therapeutic Measures Gymnastic Therapeutics Drugs and Drug Dosage"

At this particular time the medical profession as a whole would do well to take thought of the following: "The child is here through no choice of his own. He is to have a future. His health, vigor, powers of resistance, happiness, and usefulness as a citizen are determined in no small degree by the nature of his care during the first fifteen years of his life. He has a right to demand that such care be given him as will be conducive at least to a sound, well-developed body, and this should be our first thought and object regarding him. Consider for a moment the number of occupations other than the army and navy, which require physical fitness before a candidate is accepted. Competition is keen at the present time, and will be keener in the future. Employers of men and women whether in the office, the factory or on the farm, cannot afford to employ the physically weak. Another reason, this war is taking the best of the land, what are we doing to see that child life is conserved to the utmost?"

It is pleasing to note the following: "The writer feeds many hundreds of infants yearly, and is not in accord with the belief, which is now fashionable, that the casein of cow's milk is a factor of no importance in the adaptation of cow's milk."

An index of forty-eight pages completes the volume, and by its completeness adds to its value as a workable text-book.

One reads the book with interest, and is struck with the exceptional chapter on "Gymnastic Therapeutics" and in recalling its many good points, is impressed with it as a book of *individuality* and *practicality*.

ARCHIBALD D. SMITH

MILITARY SURGERY. By DUNLAP PEARCE PENHALLOW, S.B. M.D. (Harv.) Major Medical Reserve Corps, U.S.A., Chief Surgeon Amer. Women's War Hosp., Paignton, Eng., introduction by SIR ALFRED KEOUGH, K.C.B. Director-General Army Medical Service. Original drawings by the author. Second edition. London: Henry Frowde, Hodder & Stoughton, Oxford Univ. Press, Warwick Sq., E.C., and 35 West 32d Street, N.Y. City, 1918.

The author gives to us a complete outline of his work tabulations, and experiences in war surgery.

The chapters on "Bacteria and Infections" cover the subjects in detail. Due to the high degree of soil fertilization, anaerobic bacteria, especially bacillus perfringens and bacillus tetanus, may be demonstrated in the majority of wounds. The action of gas-producing organisms is greatly assisted by the presence of staphylococci and other bacteria. The rapidity of the infection is governed by the amount of dead and dying tissues.

The treatment of tetanus has been standardized. A primary injection of anti-tetanic serum is given at the time the patient is first seen, and is followed by a second, third and fourth injection given at ten-day intervals. It is estimated that in about ten days the immunity from a single dose is lost. Experience shows that tetanus breaks out in many cases with healed wounds. The dose is 500 U.S.A. units containing 3 cc or less of horse serum.

"Latent Sepsis" is an interesting subject. We are told "that bacteria remain quiescent in the scar tissue and tissue immediately surrounding the healed tract, and by traumatizing these tissues and lowering their vitality, the bacteria are liberated and begin to grow." Three months from the time of healing must have elapsed before it is safe to operate.

Eighty pages are given to the "Treatment of Wounds." Various techniques are described in full.

The author adopts a very radical method of procedure in the cases which he selects for bone plates. His conclusions are as follows:

(1) Even if an infection in the wound be present, union will take place.

(2) Little more, if any, necrosis occurs than takes place in those cases which are allowed to heal in a deformed position.

(3) Early removal of the plate is indicated as soon as there is any callous formation, and this is an important point, as callus will not form at the site of the plate, but will form everywhere else.

(4) Convalescence is not protracted much longer, if it at all, than in other cases.

(5) Better alignment and position are obtained from the beginning with less resultant deformity.

(6) Adequate drainage should be established in all cases, not only of the soft parts, but of the medullary cavity itself.

The above conclusions open up a very interesting line for thought and observation. As the process of repair covers a period of months, whatever the method, it surely is preferable to have the bones in proper position and alignment while repair is going on.

Case histories and skiagrams add very materially to the value of the book. We consider this work a valuable addition to the war surgery literature.

HARRY R. TARBON

LESSONS FROM THE ENEMY, HOW GERMANY CARES FOR HER WAR DISABLED. By JOHN R. McDILL, M.D., F.A.C.S., Major, Medical Reserve Corps, U.S. Army. (Medical War Manual No. 5.) 262 pp. Illustrated. 16mo. Philadelphia and New York, Lea & Febiger, 1918. \$1.50.

This excellent little manual contains an enormous amount of information concerning the medico-military organization in Germany. The author has evidently studied, compiled and presented the literature furnished to him by the German military authorities. The manual emphasizes the necessity of attention to the minutest details, as well as the necessity of the effort of each individual in carrying on the present struggle.

The chapter on "The German Medico-Military Organization in War" includes every particle of information necessary to be known, the personnel—officers and men—their duties, equipment, disposition, hospitals and dressing stations, modes of transportation and a history of the development of the present system.

The chapter of "Administrative Methods of the Sanitary Service in the German Army" explains the plan of records and correspondence, the authority in this service, and the duties of the officers. It gives no comment or information as to whether or not this system has stood the strain of the present war.

The explanation of the plan and scope of the military base hospitals in Germany is excellent and shows the carefully laid plans to care for the wounded and convalescents—no detail or care or attention to comfort has been overlooked—a thorough preparation for a nation not expecting war. The draft of organization for a branch base hospital gives in outline the administration of the hospital and is very similar to the plan now used by the other nations.

The chapter on "Some Medical and Surgical Aspects of the War" embodies in a short space the important medical and surgical conditions which have arisen during this war, not confining the author's observations to conditions in Germany, but being a summary of these conditions as developed by the war. No mention is made of the treatment of gas asphyxiation.

The chapter on "Volunteer Nursing and Welfare

Work Under the Red Cross shows the more thorough business like methods of this organization and its various branches in peace times in Germany. No detail of preparation for war was omitted every man not of military usefulness was impressed into the auxiliary reserve service practically every woman had some course in nursing in preparation for the care of the wounded resulting from the war which they must have foreseen. Consequently when war was declared Germany had an auxiliary nursing organization also lately ready for service.

The lesson of the book lies in Germany's preparation for the reeducation of the war disabled. The necessity of this reeducation must be realized by every individual in this country. It is not only a medical question but is a sociological one and one which the reviewer feels will be handled properly by the United States Government. No nation has approached the United States in the fulfillment of mechanical necessities when the need has arisen.

This book is an excellent one for every Medical Reserve Officer to read carefully for information. It shows careful study and effort by the author. The reviewer cannot help feeling however that one statement in the author's permission by the German authorities to study German medico-military organization has prevented him from giving its full benefit of his observations. No comment has been made concerning the actual efficiency of these carefully planned systems during the present war. The statement in the author's authority from headquarters to study the German method is as follows: The manuscript of your work must be submitted here. HENRY M. MOSES

**SHOCK AT THE FRONT** By WILLIAM TOWNSEND PORTER  
Boston The Atlantic Monthly Press 1918 151 pp  
12mo Cloth \$1.25

This very well written book of 150 pages is the work of a student and investigator who was selected by the Rockefeller Institute because of his wide physiological laboratory experience to make a study of the blood pressure of the severely wounded.

His adventures in the search of the cause and remedy of shock were confined to the traumatic type—those who bled to death in their own veins. The wider and more complicated Shell Shock states were excluded.

The question was whether the life under fire predisposed to this type of shock or whether the condition was solely due to forces set free by the wound itself. Hence the importance of getting in touch with his subjects as soon as possible after injury. How soon after injury did symptoms appear? Was there not nevertheless in all cases the necessary time needed for the chemical or mechanical substance (fat globules in the blood stream) to release itself? Did not quite early experiments show that bombardment did not predispose? Was not the treatment to get the blood from the engorged abdominal veins into the heart and arteries by stimulating the respiratory pump by means of inhaling air rich in carbon dioxide plus the inclined position? The respiratory machine was to be sure only a toy to can with a tube and mouthpiece. In breathing the subject created his own carbon dioxide. He had to breathe under the circumstances. *Iola's best friend*. No there are those whose lips would not close on the rubber mouthpiece. It must be a bag to fit over the head properly and the carbon dioxide introduced under pressure. Not more than 3%.

The carbon dioxide treatment is an advantage—just how much can be determined only after many experiments.

Fat embolism is a frequent if not the most frequent cause of shock as seen on the battlefield. The author closes the scientific part of his story by saying that he is anxious to get to Paris to try out an electrical method for raising blood pressure.

But this brief review does not do full justice to the book. It is the printed record of a traveler's tale charmingly told. Lay or professional readers will miss an hour or so of real intellectual satisfaction in not reading every word.

It is a cross-section of a journey to France of France and of War told by a scholar who has the artist's appreciation of the beautiful.

Touching delightfully upon many experiences and observations including the business in hand, the book leaves a very pleasant impression upon the reader and eases up the morbid residual, which so many War Books of the public book stalls convey or attempt to do. A soldier would welcome this book. Shock at the Front. He should have it. More of such books. E. M. SOMERS

**MODERN UROLOGY** In Original Contributions by American Authors. Edited by HUGH CABOT M.D. F.A.C.S.  
2 Vols. Philadelphia and New York: Lea & Febiger  
1918. Illustrated. Vol I 744 pp. Vol II 108 pp.  
8vo. Cloth \$14.00

Thirty American specialists have contributed to these two delightful volumes and under Dr. Cabot's able editorship nearly all that is of value concerning this specialty of recent maturity has been gathered into a convenient and permanent form. No collection of monographs can be used for teaching students but for the general surgeon who works where specialists in urology are not available and who needs to study special technique for himself they are of supreme importance. Also to the general practitioner who wishes to learn what is possible in the way of diagnosis and treatment of genito-urinary cases (and incidentally to know whether his consultant is capable of using all modern methods) these volumes will be of great interest.

All the proven methods of accurate diagnosis and treatment of renal bladder lesions are described with a profusion of illustration and clarity of detail by some of the leaders in this line of work.

The chapters by Barney of Boston on tuberculosis of the male genital organs and those concerning the possibilities of diagnosis and treatment of ureteral lesions by Henner of Baltimore will be found of special interest.

That American urology stands par with that of any country and that the student in this branch of medicine need not leave this country to be properly equipped for its practice is well demonstrated by the contributions in this splendid book. STURDIVANT READ

**ESSENTIALS OF PRESCRIPTION WRITING** By CARL EGGLESTON M.D. Instructor in Pharmacology, Cornell University Medical College New York City. Second Edition. Reset. 32mo of 134 pages. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$1.25 net.

Dr. Eggleston in his effort to provide the student of medicine with succinct yet sufficient treatment of the subject of prescription writing has succeeded admirably. The subject is considered in a sequence that is well adapted to the student and that should prove of great help to the physician who realizes his shortcomings in prescription writing. There is little excuse for poorly constructed prescription writing when there is available such a book as this. M. F. DEL

**THE CONFESSION OF HAMILTON WHIFLER** A Novellette of Religion and Love Introducing Studies in Religious Psychology and Pathology. By PRESCOTT LOCKE. Bloomington Ill. The Pundict Publishing Co. 1917.

This book is unique in its style of presenting for practical study and application certain phases of psychology of intense interest to the layman as well as to the practicing physician. Despite the fact that every reader of this book may

some case In too many instances he has no time for consecutive reading or thought He is constantly oppressed by the feeling that there is something left undone His life settles to a dreary routine of work, responsibility, and anxiety, and with many temperaments, of perpetual worry

If the principle is right, that the vacation should bring a change of occupation, it is clear that the doctor's vacation should be one of rest and quiet He should not seek a place where he will be obliged to engage in active social duties or be in contact with strenuous humanity On the other hand, he should not, as a rule, become a hermit and utterly remove himself from human association Solitude may be deadly to him He should get away from friends and relatives, unless they are very near and congenial to him If he feels that he cannot rest or be quiet, that is a distinct reason why he should attempt to do so To be among people, but not of people for a brief time is best for most practitioners It would be as rational to advise a letter carrier to go into the country and take long hikes over the hills as to advise the doctor to go into active social life on his vacation particularly if it must be short

Temperament must largely govern the nature of the vacation One individual may wish a quiet camp with a few congenial friends, another a fishing trip, another a yacht or motor boat where he can throw off all conventionality, another a hotel where he can see active life, but not be obliged to take part in it, another a quiet bungalow with his family But one rule should apply to all to get away from the door-bell, the telephone, complaining patients and those who narrate to him in minute detail the illnesses of their sisters, their cousins, and their aunts

A recent article on vacations, advised a quiet farm and the hay field The muscles of the average doctor are not attuned to the pitchfork The one advantage of such occupation is, that after about two days the doctor's mind will be taken off of his work and will be concentrated in contemplation of his sore muscles Many people, both physicians and laymen, when they go on a vacation seem possessed of the demon of unrest They feel that they must exercise must get into the open air, must get their faces browned and come back to their work worn out

The city physician sees these people every fall, who come to him to be repaired after the injudicious overwork of their vacations

"He who always labors, cannot have true judgment" In other words, he gets into a rut, and a rut is a very bad thing to get into A man in a rut loses interest in outside matters He becomes irritable and is only contented when in harness He does not do his work with vigor and energy, but dawdles and fusses, and wastes time over details He feels that there is but one way of doing things and that is his way If he is a doctor, he comes to adopt a narrow line of treatment, and all outside of it is worthless

That young philosopher, Chimmie Fadden remarked "When a fellow finds out he is in a rut, it is up to him for him to climb out If he don't get a move on him soon, he can't climb out, nohow, and that queers his nerve" It is a good thing for a doctor to sit down once a year and take stock of his mental state If he finds himself in a rut he had better climb out right away into a vacation Those who become fixed in a rut are apt to become "queer" as they grow older Impairment of judgment and a one-sided way of looking at things lead to the adoption of hobbies and weird and extreme theories Views become narrow and restricted and cannot be diverted from one channel In other words, they become cranks Association with liberal minded men and women is the best antidote for the crank

We are well aware that it is often difficult for a doctor to break away and get a rest If he decides upon it in an indefinite way, he will probably not get it If he decides to go away on a definite date, he is much more certain to go If he informs his patients of his plans and makes proper arrangements for their care, affairs are much more likely to arrange themselves favorably Brief reference to the toil of a doctor's life, and the necessity, for their sake as well as for his won, for change and rest, will reconcile many a patient who would otherwise be aggrieved, if it were sprung upon them at the last minute without due explanation

We would again repeat that a vacation for a physician is not a selfish seeking for pleasure, but is one of his professional duties The longer he continues in practice, the more imperative does this duty become

## Original Articles

### NEWER METHODS IN THE DIAGNOSIS OF THYROID DISORDERS PATHOLOGICAL AND CLINICAL \*

A Functional Activity of Thyroid Adenomata, as Indicated by the Cellular Content of Mitochondria

B Adrenalin Hypersensitiveness in Clinical States of Hyperthyroidism

By EMIL GOETSCH M.D.,  
BALTIMORE MD

A *Functional Activity of Thyroid Adenomata, as Indicated by the Cellular Content of Mitochondria*

IT is my purpose to outline some results obtained from a study of disturbed thyroid function occurring in clinical cases of thyroid disease observed during the past three years. The work was begun while I was at the Peter Bent Brigham Hospital, Boston, and since returning to Baltimore I have had the exceptional opportunity of continuing the work in association with Prof W S Halsted. In the list of cases studied there were approximately 12 simple goitres, 50 exophthalmic goitres, 125 adenoma cases, and eight cases for the present unclassified. I shall speak only of two phases of the work at the present time, namely, in the first place with regard to newer evidences, histological and chemical of hyperthyroidism in cases of thyroid adenomata, and secondly, of the local and constitutional hypersensitiveness to adrenalin in clinical states of hyperthyroidism.

Our present-day conceptions in regard to the clinical symptomatology dependent upon certain of the pathological conditions of the thyroid gland are quite uniform. Thus, with the ordinary simple colloid goitre in which there is a mild or moderate enlargement of the gland increase in size and content of the thyroid alveoli with thinning out and atrophy of the parenchymal cells, examples of which are seen in the hypertrophied gland at puberty or after, there may be evidences of mild hyperthyroidism, often there are no recognizable disturbances, and at times there may be a distinctly hypothyroid state. In the large colloid gland occurring in adults, the process of epithelial atrophy with accumulation of colloid may have advanced so far as to lead to very definite symptoms of hypothyroidism. In this state then, we feel certain that with the rather uniform changes seen in the gland of a retrogressive character, the functional activity of the thyroid epithelium is diminished resulting in clinical hypothyroidism of various degrees. The histological picture of the gland in these conditions is familiar to all.

Secondly in the well known state of hyperthyroidism known as exophthalmic goitre there

is a diffuse pathological change in the thyroid gland, characterized by the tamarit type of hyperplasia first described by Professor Halsted in 1888. This picture of epithelial hypertrophy and hyperplasia, with infolding of the lining walls of the alveoli, a markedly diminished amount of colloid, as a rule, and increased vascularity, has served as the histological criterion of overactivity of the thyroid gland. This histological picture is almost always found in the clinical disease known as exophthalmic goitre.

There is then in these two rather definite clinical states a very close association between the clinical symptoms exhibited and the pathological changes in the thyroid gland. When we come now to a consideration of the problems involved in a study of thyroid adenomata, we find, as I shall show, that in the first place there is no constant histological picture characterizing these circumscribed new growths in the thyroid gland. In fact, one may find every conceivable type of histological picture depending upon the character of growth and proliferation of the cells in the adenoma, and upon the various forms of degeneration to which these growths are subject. In the second place, there may be clinical symptoms of hypothyroidism in cases where a large cystic adenoma causes pressure atrophy of the gland, there may be no recognizable symptoms or there may be definite clinical hyperthyroidism of all grades of severity. This has led to a very wide belief among clinicians and pathologists that thyroid adenomata are not responsible of themselves for symptoms of hyperthyroidism, and that when such symptoms are present in a case we must look further than in the thyroid gland for an explanation of them. Others have attempted to explain the hyperthyroidism by assuming that the adenoma arising within the thyroid gland irritates and presses upon the latter, thus causing an excessive amount of secretion to be poured into the circulation with the resultant symptoms of hyperthyroidism. One need hardly mention that the secretion could not be thus increased over any great extent of time as the gland would soon be dry following continued squeezing, and again as so well known in pathology, pressure may for a short time irritate but sooner or later is followed by atrophy and functional inactivity of the parts pressed upon. Some have felt that the adenoma might be responsible but have offered no further explanation.

As a consequence of these facts it has been very difficult to establish an association between clinical symptoms and histological structure in cases of adenomata. The ordinary grosser pictures of colloid hypertrophy and exophthalmic hyperplasia failing absolutely to indicate glandular inactivity on the one hand or secretory overactivity on the other. Thus it has been repeatedly found

that in a case of adenoma presenting a simple colloid picture there is an associated clinical hyperthyroidism, and again cases of adenoma showing evidences of marked epithelial overgrowths and hyperplasia have been unassociated with clinical symptoms of hyperthyroidism. In other words, the adenomata follow no general rules in their growth, such as hold for secretory changes in the thyroid gland itself. I feel that it is the adenomata which are largely responsible for the failure on the part of the pathologists to be able to predict clinical symptoms after observing the section, and for clinicians to predict the histological picture of the thyroid gland to be removed. Thus, in certain clinics where such experiments are carried out it was found that the pathologist failed to associate the histological picture with clinical symptoms in about 20 per cent of the cases of thyroid disease operated upon.

There is an obvious necessity therefore of obtaining if possible a histological method which is capable of demonstrating within the cell, structures which are closely associated with its functional activity. In other words, to know what the individual cell is doing. This is not a difficult matter to recognize in glandular organs such as the pancreas, whose secretory activity is evidenced by the well known intracellular structures known as secretion or zymogen granules. In the thyroid gland, as in most of the ductless glands, the existence of such definite granules is still problematical.

There are however other intracellular structures which have been known to exist in all living cells, whether plant or animal, which are closely associated in number and size with changes in the activities of the cell. These structures are known as mitochondria. I shall not go into a discussion of these structures at this time, but will refer those who are further interested to the very helpful summary of our knowledge concerning these structures, published in a paper by E. V. Cowdry,<sup>4</sup> in the *Journal of Anatomy* of May, 1916, and entitled, "The general functional significance of mitochondria." Suffice it to say that the mitochondria are definite morphological elements occurring in the cytoplasm of all living cells not only of animals but also of plants. They are scattered fairly uniformly throughout the cell cytoplasm. In the higher power magnification the mitochondria appear as granules or as straight or curved filaments or rods of varying lengths up to four and five microns. At times they appear almost granular. They are more abundant in the active stages of the life of the cells and diminish progressively in number as the cells become senile. This is exemplified in the different layers of the skin. In the deeper layer where cell division and growth are more rapid, the mitochondria are more numerous

while in the more superficial cells, those either dead or dying, the mitochondria are either very few in number or entirely absent. Moreover the mitochondria decrease in number as one passes from nucleated to non-nucleated red blood cells, in which metabolic processes are very active. Romeis has found that mitochondria are very numerous in actively regenerating tissue. He used the term plasmosomes, a synonym for mitochondria. They have been observed furthermore to be increased in number in kidney cells after the administration of phloridzin. Other facts could be cited, which have been advanced by investigators to support the view that mitochondria participate in the processes involved in cell activity and metabolism. By some, mitochondria are said to be transformed into zymogen granules in the pancreas and thus to be antecedents of the specific secretion of granular cells. There is, however, no evidence to support this view. In accordance with these facts it would seem probable that in the protoplasm of overactive glandular cells we should find an increased number of mitochondria over the normally active cell, whether this activity manifests itself in cell multiplication for the replacement of cells constantly dying, as in the skin, or in regeneration and growth as in embryonic cells, or in secretory activity as in glandular cells. In brief, whatever the function of the cell normally is, if this function becomes excessive we should expect to find an increased number of mitochondria. This is precisely what was found in the various pathological conditions of the thyroid gland, as I shall shortly report (Drawings showing mitochondria in colloid and exophthalmic goitres and in active adenoma).

Before summarizing the results obtained it may be well to mention a word in regard to the technique employed in these studies. The tissue to be examined should be absolutely fresh, and placed in the fixation fluid in small pieces immediately after removal from the body. If this precaution is observed and the technical steps recommended by Bensley are carefully followed, no difficulty should be experienced in obtaining satisfactory results. The fixation fluid is an osmic acid, bichromate of potash and acetic acid mixture and the subsequent staining consists in the application, after mordanting with potassium permanganate, of acid fuchsin with a counter stain of methyl-green. The sections should be less than 5 mm thick. The mitochondria are stained a brilliant red and are readily recognizable particularly with a sharp counter stain such as methyl-green.

The operative material of about 200 cases of thyroid disease was examined for the occurrence of mitochondria in the glands and some interesting and very constant results were obtained. Thus in the well recognized cases of colloid

goitre unassociated with symptoms of hyperthyroidism very few or practically none of these structures were found in the thyroid cells. In every case of exophthalmic goitre examined the mitochondria were found to be present in enormous numbers. Thus their occurrence in small or large numbers, as an index of functional activity of the thyroid cell, corresponds very closely to our conception of functional activity in cases of colloid and exophthalmic goitre. In the hypertrophy cases associated with symptoms of mild hyperthyroidism the mitochondria are found in moderate numbers, and in the cases of adenoma associated with symptoms of hyperthyroidism they are found in excessive numbers, and this holds true whether the adenoma in the grosser examination presents the simple colloid picture or that of hypertrophy and hyperplasia. The normal gland as regards the number of mitochondria it contains, stands midway between the colloid gland with almost none and the mildly toxic adenoma containing a moderate number.

Before considering in greater detail the results obtained from the mitochondrial studies it will be helpful to review briefly a few facts in regard to the growth and evolution of the adenomata occurring in the thyroid gland. The best and most comprehensive study on this subject is that by Wolfser published in 1883.

He describes most carefully the gross and microscopic structure of the adenomata and the degenerative changes to which they are so very prone. Wolfser believed that many of the adenomata arose from the so called fetal or embryonic cells, in accordance with the Copenhagen view of the origin of a great many pathological new growths. These fetal cells he describes as occurring usually interstitially in the thyroid parenchyma; that is between the acini is a rule and not taking part in the formation of the alveolar wall. They appear as large rounded cells occurring in groups and with a characteristic vesicular nucleus. These nests of fetal cells he supposed gave rise to these new growths, hence the term "fetal adenomata," which has since been used very generally for them. Wolfser was, however, unable to prove this assumption by the histological methods which were available at his time. I have observed these groups of cells, in several instances of thyroid disease and have found that they contain great numbers of mitochondria, giving to these cells a characteristic brilliant red stain after acid fuchsin. The alveolar cells in the meantime are in some simple colloid glands observed being almost totally devoid of mitochondria. These so called fetal cells have the same appearance as the cells observed in the adult adenoma and I feel that we have evidence which warrants us in believing that Wolfser was correct in his assumption that his "fetal adenomata" arise from these inter-

stitial cell nests, occurring probably in all normal glands. We see, then, that these cells have the potentiality of developing into adenomata under the proper stimulus which in many cases seems to be puberty or pregnancy, for the nodule is often first noticed at one of these periods and may increase in size with each subsequent pregnancy.

Having thus commenced, the adenoma may grow slowly over a period of years or it may grow rapidly, and undergo degeneration, a frequent end result. It is always encapsulated and quite discreet from the surrounding normal gland. Adenomata are often one sided but may however be bilateral or even multiple and may occur anywhere in the thyroid gland. They may be so small as to escape notice of the naked eye or may grow to an enormous size. The huge pendulous goitres, so frequently pictured in the older text-books, I believe, were in all probability huge cystic adenomata.

Because of their peculiar structure these adenomata are very prone to degeneration. They are very cellular hence friable and as a result hemorrhage into the interior is common, particularly in the large tumors. Because of the fact that there is practically no connective tissue framework in the tumor, such as in the normal thyroid gland the blood vessels occurring in the capsule are not carried rapidly into the interior of the tumor, and hence the unsupported thin-walled vessels or sinuses rupture with resultant hemorrhages and failure of circulation of parts of the tumor with consequent degeneration. In the large tumors one invariably finds signs of degeneration particularly in the centre which is naturally farthest removed from the efficient capsular circulation. The cells the victims of this beginning degeneration at first begin to accumulate granules of fat in their interior they then begin to fragment liquefy and finally an adenoma may be transformed into a hemorrhagic cyst, with a cortex or rim of healthy tissue in immediate approximation with the capsule from which it derives sufficient circulation to prevent this degeneration. Many of these adenomata undergo a kind of ecthinous or myxomatous and occasionally malignant degeneration hence the terms "adenoma ecthinosum," "cystic adenoma," "adenoma myxomatousum," and "adenoma malignum" of the older writers. Calcification may occur as a late change in the trabeculae or capsule of an old degenerated cystic adenoma. Often the vessels show an extreme grade of sclerosis and intimal thickening so extreme as to almost totally occlude the lumen thus virtually strangling the interior of the growth.

The histological picture is an extremely variable one with absolutely no tendency to a general type. It may present a simple colloid

that in a case of adenoma presenting a simple colloid picture there is an associated clinical hyperthyroidism, and again cases of adenoma showing evidences of marked epithelial overgrowths and hyperplasia have been unassociated with clinical symptoms of hyperthyroidism. In other words, the adenomata follow no general rules in their growth, such as hold for secretory changes in the thyroid gland itself. I feel that it is the adenomata which are largely responsible for the failure on the part of the pathologists to be able to predict clinical symptoms after observing the section, and for clinicians to predict the histological picture of the thyroid gland to be removed. Thus, in certain clinics where such experiments are carried out it was found that the pathologist failed to associate the histological picture with clinical symptoms in about 20 per cent of the cases of thyroid disease operated upon.

There is an obvious necessity therefore of obtaining if possible a histological method which is capable of demonstrating within the cell, structures which are closely associated with its functional activity. In other words, to know what the individual cell is doing. This is not a difficult matter to recognize in glandular organs such as the pancreas, whose secretory activity is evidenced by the well known intracellular structures known as secretion or zymogen granules. In the thyroid gland, as in most of the ductless glands, the existence of such definite granules is still problematical.

There are however other intracellular structures which have been known to exist in all living cells, whether plant or animal, which are closely associated in number and size with changes in the activities of the cell. These structures are known as mitochondria. I shall not go into a discussion of these structures at this time, but will refer those who are further interested to the very helpful summary of our knowledge concerning these structures, published in a paper by E. V. Cowdry,<sup>4</sup> in the *Journal of Anatomy* of May, 1916, and entitled, "The general functional significance of mitochondria." Suffice it to say that the mitochondria are definite morphological elements occurring in the cytoplasm of all living cells not only of animals but also of plants. They are scattered fairly uniformly throughout the cell cytoplasm. In the higher power magnification the mitochondria appear as granules or as straight or curved filaments or rods of varying lengths up to four and five microns. At times they appear almost granular. They are more abundant in the active stages of the life of the cells and diminish progressively in number as the cells become senile. This is exemplified in the different layers of the skin. In the deeper layer where cell division and growth are more rapid, the mitochondria are more numerous

while in the more superficial cells, those either dead or dying, the mitochondria are either very few in number or entirely absent. Moreover the mitochondria decrease in number as one passes from nucleated to non-nucleated red blood cells, in which metabolic processes are very active. Romeis has found that mitochondria are very numerous in actively regenerating tissue. He used the term plasmosomes, a synonym for mitochondria. They have been observed furthermore to be increased in number in kidney cells after the administration of phloridzin. Other facts could be cited, which have been advanced by investigators to support the view that mitochondria participate in the processes involved in cell activity and metabolism. By some, mitochondria are said to be transformed into zymogen granules in the pancreas and thus to be antecedents of the specific secretion of granular cells. There is, however, no evidence to support this view. In accordance with these facts it would seem probable that in the protoplasm of overactive glandular cells we should find an increased number of mitochondria over the normally active cell, whether this activity manifests itself in cell multiplication for the replacement of cells constantly dying, as in the skin, or in regeneration and growth as in embryonic cells, or in secretory activity as in glandular cells. In brief, whatever the function of the cell normally is, if this function becomes excessive we should expect to find an increased number of mitochondria. This is precisely what was found in the various pathological conditions of the thyroid gland, as I shall shortly report. (Drawings showing mitochondria in colloid and exophthalmic goitres and in active adenoma.)

Before summarizing the results obtained it may be well to mention a word in regard to the technique employed in these studies. The tissue to be examined should be absolutely fresh, and placed in the fixation fluid in small pieces immediately after removal from the body. If this precaution is observed and the technical steps recommended by Bensley are carefully followed, no difficulty should be experienced in obtaining satisfactory results. The fixation fluid is an osmic acid, bichromate of potash and acetic acid mixture and the subsequent staining consists in the application, after mordanting with potassium permanganate, of acid fuchsin with a counter stain of methyl-green. The sections should be less than 5 mm thick. The mitochondria are stained a brilliant red and are readily recognizable particularly with a sharp counter stain such as methyl-green.

The operative material of about 200 cases of thyroid disease was examined for the occurrence of mitochondria in the glands and some interesting and very constant results were obtained. Thus in the well recognized cases of colloid

goitre unassociated with symptoms of hyperthyroidism very few or practically none of these structures were found in the thyroid cells. In every case of exophthalmic goitre examined the mitochondria were found to be present in enormous numbers. Thus their occurrence in small or large numbers, as an index of functional activity of the thyroid cell, corresponds very closely to our conception of functional activity in cases of colloid and exophthalmic goitre. In the hyperthyroid cases associated with symptoms of mild hyperthyroidism the mitochondria are found in moderate numbers, and in the cases of adenoma associated with symptoms of hyperthyroidism they are found in excessive numbers, and thus holds true whether the adenoma in the grosser examination presents the simple colloid picture or that of hypertrophy and hyperplasia. The normal gland as regards the number of mitochondria it contains, stands midway between the colloid gland with almost none and the mildly toxic adenoma containing a moderate number.

Before considering in greater detail the results obtained from the mitochondrial studies it will be helpful to review briefly a few facts in regard to the growth and evolution of the adenomata occurring in the thyroid gland. The best and most comprehensive study on this subject is that by Wolfser published in 1883.

He describes most carefully the gross and microscopic structure of the adenomata and the degenerative changes to which they are so very prone. Wolfser believed that many of the adenomata arose from the so called foetal or embryonic cells, in accordance with the Colnheim view of the origin of a great many pathological new growths. These foetal cells he describes as occurring usually interstitially in the thyroid parenchyma, that is, between the cells as a rule and not taking part in the formation of the alveolar wall. They appear as large rounded cells occurring in groups and with a characteristic vesicular nucleus. These nests of foetal cells he supposed gave rise to these new growths, hence the term "foetal adenomata" which has since been used very generally for them. Wolfser was, however, unable to prove this assumption by the histological methods which were available at his time. I have observed these groups of cells in several instances of thyroid disease and have found that they contain great numbers of mitochondria, giving to these cells a characteristic brilliant red stain after acid-fuchsin. The alveolar cells in the meantime are in some simple colloid glands observed being almost totally devoid of mitochondria. These so called foetal cells have the same appearance as the cells observed in the adult adenoma and I feel that we have evidence which warrants us in believing that Wolfser was correct in his assumption that his "foetal adenomata" arise from these inter-

stitial cell nests, occurring probably in all normal glands. We see, then, that these cells have the potentiality of developing into adenomata under the proper stimulus which in many cases seems to be puberty or pregnancy, for the nodules are often first noticed at one of these periods and may increase in size with each subsequent pregnancy.

Having thus commenced, the adenoma may grow slowly over a period of years or it may grow rapidly, and undergo degeneration, a frequent end result. It is always encapsulated and quite discrete from the surrounding normal gland. Adenomata are often one sided, may however be bilateral or even multiple and may occur anywhere in the thyroid gland. They may be so small as to escape notice of the naked eye or may grow to an enormous size. The huge pendulous goitres, so frequently pictured in the older text-books I believe, were in all probability huge cystic adenomata.

Because of their peculiar structure these adenomata are very prone to degeneration. They are very cellular, hence friable and as a result hemorrhage into the interior is common, particularly in the large tumors. Because of the fact that there is practically no connective tissue framework in the tumor, such as in the normal thyroid gland, the blood vessels occurring in the capsule are not carried rapidly into the interior of the tumor, and hence the unsupported thin-walled vessels or sinuses rupture with resultant hemorrhages and failure of circulation of parts of the tumor with consequent degeneration. In the large tumors one invariably finds signs of degeneration, particularly in the centre, which is naturally farthest removed from the efficient capsular circulation. The cells the victims of this beginning degeneration at first begin to accumulate granules of fat in their interior, they then begin to fragment liquefy and finally an adenoma may be transformed into a hemorrhagic cyst with a cortex or rim of healthy tissue in immediate approximation with the capsule from which it derives sufficient circulation to prevent this degeneration. Many of these adenomata undergo a kind of gelatinous or mucinous and occasionally malignant degeneration hence the terms "adenoma gelatinosum," "cystic adenoma," "adenoma mucinosum," and "adenoma malignum" of the older writers. Calcification may occur as a late change in the trabeculae or capsule of an old degenerated cystic adenoma. Often the vessels show an extreme grade of sclerosis and intimal thickening so extreme as to almost totally occlude the lumen, thus virtually strangling the interior of the growth.

The histological picture is an extremely variable one with absolutely no tendency to a general type. It may present a simple colloid

appearance or an almost typical exophthalmic goitre appearance. The cells may be grouped in solid masses resembling a true syncytium or in more closely packed *acini* with or without colloid, or there may be any combination of these appearances in a single adenoma. It is for this reason that these adenomata have caused so much difficulty in classifying them histologically and in trying to correlate their appearance with clinical symptoms. Some of the very cellular adenomata have been mistaken for malignant tumors, carcinomata particularly. It must be remembered, however, that in a small percentage of cases malignant degeneration follows an adenomatous condition.

On the other hand, they do follow this one rule, namely, that in all cases except the very few simple colloid adenomata, their cells contain a great abundance of mitochondria, indicating as I believe their functional overactivity. One might object, perhaps, that in certain cases adenomata were unassociated with hyperthyroidism. This observation may be entirely true and still would not disprove the statement that foetal adenomata, particularly in their early stages are hyperactive.

The question of symptoms produced is entirely one of amount of secretion elaborated by the adenomata and the tolerance of the individual. Thus a small adenoma may cause little trouble because the amount of secretion poured out relative to the body weight of the individual, is not sufficient to be toxic or because of a considerable tolerance on the part of the individual just as is the case with many other drugs. If the adenoma grows larger, or if new ones arise, a definite, clear-cut hyperthyroid syndrome arises. In other words if there is enough healthy adenomatous tissue present, symptoms of hyperthyroidism will intervene and may just as surely disappear again if the adenoma undergoes degeneration.

Long before actual disintegration occurs and before evidences of degeneration are recognizable in a hematoxylin and eosin specimen, one can find evidences of beginning degeneration, particularly in the center of these growths by the fact that there is a marked increase in the amount of intracellular fat, stainable with osmic acid or Sudan III. Along with this increase in fat there is a disappearance of mitochondria indicating a functional inactivity. Near the periphery of the tumor, however, that is near the capsular circulation, the cells are healthy in appearance, they do not contain fat and the mitochondria are present in large numbers. In fact a very close relationship has been found between the amount of fat present in the cells and their mitochondria content, a large amount of the former being associated with an absence of mitochondria and with an absence of clinical

symptoms. By thus recognizing the amount of active tissue present we can understand how one adenoma may be associated with hyperthyroidism and another not. Cysts have been recognized to be associated with hyperthyroidism, a fact which I believe is explainable by the activity of the peripheral subcapsular zone of healthy adenomatous tissue which they frequently contain. In fact it seems very probable from the structure of this tissue, which resembles the foetal adenoma, that the thyroid cysts so frequently encountered have their origin in adenomata and represent the terminal stage of degeneration in the latter. An adenoma may thus be responsible for marked hyperthyroidism lasting several months or even years. These symptoms may then progressively improve until when the adenoma has entirely degenerated and become cystic, they may entirely disappear. Indeed there may even be a hypothyroid state following upon atrophy of the thyroid produced by pressure of a large cyst. At such a stage, removal of the adenomatous cyst is indicated not for symptoms of hyperthyroidism but rather for cosmetic reasons or for reasons of mechanical pressure upon important neighboring structures in the neck.

In many instances small fragments of tissue were taken from the thyroid gland adjoining an adenoma and even from the opposite lobe in cases of unilateral adenoma. In all cases in which the adenoma was active and associated with clinical hyperthyroidism the thyroid gland itself was found to be inactive as shown by the increased content of fat and almost entire absence of mitochondria. The latter had furthermore an inactive simple colloid appearance. I feel that this finding effectively answers the view expressed by many that the thyroid gland itself being pressed upon and irritated is responsible for the symptoms of hyperthyroidism. It is interesting to note that this finding is closely analogous to the results obtained by Marine after administration of iodine to dogs and by Bensley after administration of iodine to the opossum, in which cases both found that the thyroid gland could be made to revert to a simple inactive looking picture. In our case under consideration it is probable that when an adenoma is furnishing a secretion analogous to that of the thyroid gland itself and in excessive amounts there is no physiological call upon the thyroid gland, which as a result becomes inactive and takes on the inactive colloid characteristics. In the case of an inactive adenoma the thyroid gland has a normal appearance, that is, no increase in fat and a moderate number of mitochondria. These results were found to be remarkably constant.

A further evidence that the adenoma is responsible for hyperthyroidism is furnished by clinical cases in which, after removal of the

tumor, the hyperthyroidism is almost immediately improved. Furthermore it is significant as Graham has shown, that adenomata of the thyroid possess the property of taking up iodine and metabolizing it into the active combination in the same way that the normal thyroid gland does, and the action on the tadpoles is the same as feeding desiccated normal thyroid. This would indicate that the adenoma contains an active principle closely analogous to that of normal thyroid. With the knowledge that adenomata are hyperactive and responsible for various grades of hyperthyroidism from the mildest to the severest, one can readily understand the clinical history, symptoms and findings presented by patients suffering with these conditions. Thus it is not uncommon to see patients who have suffered from periods of hyperthyroidism for years beginning sometimes at puberty, even before the adenomata had caused visible or palpable enlargement of the thyroid gland and neck. Possibly more often the symptoms date from the first pregnancy, they may then subside only to reappear at a later pregnancy or during subsequent years. A single adenoma may be responsible for the symptoms which after a period of several months or even years may disappear as a result of degenerative changes in the adenomata. In this way the so called spontaneous recoveries from hyperthyroidism often occur. New adenomata may however arise so that after a period of relief from symptoms, the patient again becomes nervous, loses weight, has palpitation, tachycardia, excessive perspiration, in fact practically all the symptoms which we regard as characteristic of the hyperthyroid state. This explains the waves of hyperthyroidism and the many so called "nervous breakdowns" of which several recent patients, with thyroid adenomata often too small to be visible or palpable have complained. For these nervous upsets patients had been receiving for months and in two instances over a period of thirteen to fifteen years rest cures changes of environment and so on. In many cases one is struck with the frequency of symptoms mental in origin, and characteristic of the psychasthenic, psychoneurotic and neurasthenic states.

#### *B Adrenalin Hypersensitivity in Clinical States of Hyperthyroidism*

In addition to these evidences of increased secretory activity of thyroid adenomata I feel we can mention a further test—namely the increased sensitivity to adrenalin which is found in patients suffering with symptoms of true hyperthyroidism. Before speaking of my clinical findings I shall review very briefly a number of facts recently derived from physiological experiments which support the view that whenever an increased amount of thyroid secre-

tion is present in an organism there is produced by virtue of the sensitizing action of thyroid secretion upon the sympathetic nervous system, a condition of hypersensitivity to the action of adrenalin.

Cannon and Cattell<sup>5</sup> in a paper published in 1916 showed that by stimulation of the cervical sympathetic nerve or injection of minute amounts of adrenalin the thyroid gland could be stimulated to secretory activity, a condition detectable by the electrical changes in the gland which gives rise to an action current.

Eppinger, Faltz and Rudinger<sup>6</sup> had previously in 1908 attempted to show that the thyroid and adrenal glands mutually stimulate one another and subsequently Asher and Flack,<sup>7</sup> working in Berne, published the results of their investigations on this subject in 1910. They set out to show that during and following stimulation of the laryngeal nerves which they regarded as the secretory nerves of the thyroid gland a given dose of adrenalin would produce a greater circulatory response than before such stimulation. They felt justified in concluding that (1) stimulation of the laryngeal nerves causes secretion of the thyroid gland, (2) thyroid secretion sensitizes sympathetic endings to the action of adrenalin. Their results were not entirely convincing and certain details of their experiments made some of these results questionable. Asher and Flack had however, the correct conception, but did not succeed in working it out in a convincing fashion as subsequent work has shown.

In a brief report published in 1915 Oswald<sup>8</sup> records a series of observations on the effect of injection of iodthyroglobulin on the circulation. It produces no alteration in blood pressure or pulse rate. But after intravenous injection of this substance, which Oswald calls the true secretory production of the thyroid, adrenalin causes a rise in pressure which is higher and of longer duration than before. The curve may in fact be twice as high and twice as long. This effect is manifest however, only after a short latent period and persists for a considerable time, having been demonstrated after the lapse of 1½ hours. It is Oswald's belief therefore, that iodthyroglobulin renders sympathetic endings over-sensitive to the action of adrenalin. These studies are suggestive.

It remained for Cannon and his associates to show in a very convincing manner I believe that thyroid secretion sensitizes the sympathetic nervous system to the action of adrenalin. In a series of experiments, published in October 1916 Lev<sup>9</sup> shows that in cats after stimulation of the cervical sympathetic in the neck, a procedure which we now know causes secretory activity of the thyroid there can be demonstrated an increase of the effectiveness of adrenalin in

raising arterial pressure. This increase may be as much as 200 to 300 per cent. He has further shown that the injection of adrenalin, even in minute amounts, produces a similar effect.

When the thyroid glands have been previously removed, cervical sympathetic stimulation or adrenalin injection does not produce an increase in the pressor response to adrenalin. He feels, therefore, that it is justifiable to conclude that stimulation of the cervical sympathetic or adrenalin injection induces secretory activity in the thyroid gland and that thyroid secretion renders more excitable the sympathetic structures acted on by adrenalin in raising arterial pressure.

Similarly after intravenous injection into thyroidectomized cats of a solution of the crystalline iodine-containing compound isolated from the thyroid by Kendall, there is produced an increased efficacy of adrenalin as a pressor agent.

After thyroid stimulation, even at the time when adrenalin is more effective as a pressor agent there is no increase in the augmentation of pulse rate produced by adrenalin injection. This Levy explains by assuming that the thyroid secretion has a relative action in sensitizing sympathetic tissues to the action of adrenalin, since the increase in vascular response is not associated with greater excitability of the sympathetic accelerators of the heart. This result is contrary to those I have obtained in the clinical studies in which in states of hyperthyroidism, injections of adrenalin are followed, as a rule, by increased pulse rate as well as increased blood pressure.

There is some evidence in the literature indicating that the thyroid secretion acts as a secretory stimulant to the adrenals and hence one might think that the increased effectiveness of adrenalin as a pressor agent after thyroid stimulation is dependent on a greater amount of circulating adrenalin. Levy shows that this is not the case for in adrenalectomized cats there can be demonstrated after thyroid stimulation an increase in pressor response similar to that seen in unoperated animals.

Using the glycosuric response as an indicator of adrenalin sensitiveness, Eppinger, Falta and Rudinger found that after thyroidectomy in dogs, in other words, in states of diminished thyroid secretion, the sensitiveness to adrenalin was markedly diminished. They found, furthermore, that cretins were very tolerant to adrenalin, a considerable dose of the latter together with sugar administration being necessary to produce glycosuria.

Eppinger and Hess,<sup>6</sup> 1909, in their studies on vagotonic and sympathetico-tonic found that in a few instances, observed in the human, the sympathetic was found irritable in exophthalmic goitre and in diabetes mellitus. They used a rather large dose, namely 0.001 gm or 1 cc of the 1-1000 sol of adrenalin, a dose sufficient to

cause mild symptoms in cases which are not hyperthyroid.

In a very complete clinical analysis of some disturbances occurring in the so-called vagotonic and sympathetico-tonic states, published in 1912, Barker and Sladen<sup>2</sup> report their findings in 21 cases, most of which showed nervous manifestations. In this list of 21 cases there were 3 of exophthalmic goitre and 4 of hyperthyroidism in association with other conditions. The cases were examined with reference to their reactions after injections of pilocarpin, atropin and adrenalin. In brief they found that hyperthyroid individuals were sensitive to the adrenalin, reacting with a rise of blood pressure and pulse and exhibition of clinical findings. In some cases, however, a dose of adrenalin (0.001 gm) was used, large enough to produce glycosuria and large enough to produce symptoms in conditions perhaps not truly hyperthyroid. Whether there were any cases of adenoma of the thyroid in this series is not stated.

In view of these facts stated above I attempted to determine whether there would not be an increased sensitiveness to adrenalin in all cases manifesting symptoms of hyperthyroidism. I began by using a hypodermic dose of 10 minims, or 0.00075 gm (1-1000 sol) and then observing the effect upon the pulse, blood pressure and upon the constitutional reaction, over a period of one and one-half hours. In all cases of hyperthyroidism, whether mild or marked, a positive reaction was obtained. Later I found that this dose would occasionally produce a slight reaction in what one would regard as possibly a normal individual. During the past year consequently 0.0005 gm doses (0.5 cc of 1-1000 sol) were used, an amount which is insufficient to cause any but the very slightest increase, less than 10 in fact, in blood pressure or pulse and practically no subjective symptoms whatever. This dose was then used as the standard. If thyroid secretion sensitizes the sympathetic endings to the action of adrenalin, then it is reasonable to suppose that a sudden increase of adrenalin in the circulating blood should call forth active responses throughout the domain of distribution of the sympathetic system. This result I have found to be remarkably constant. Not only does a hyperthyroid patient react actively constitutionally to a subcutaneous dose, but also locally to an intradermic dose of one minim of 1-4000 sol of adrenalin. This latter reaction depends upon the excessive contraction of the smooth muscle in the small vessels of the skin, supplied by the sympathetic and is characterized by a central large area of blanching surrounded by a peripheral zone of reddening due to neighboring secondary vaso-dilation. In the blanched area a characteristic "goose flesh" is often seen due to the contraction of the "erector pili" muscles,

which are of the smooth variety and under sympathetic control. The reaction, which is a purely physiological one lasts for one and one-half to two and one quarter hours as compared with one half to three quarters of an hour in a normal individual, in whom furthermore the area of blanching is much less definite and the peripheral zone of red is usually entirely absent. Whether this cutaneous reaction will be found to be characteristic of hyperthyroidism alone I am not prepared to say. We are depending here entirely upon the reaction of the vaso-motor system which is characteristically sensitive in hyperthyroidism and are not assisted by the variety of responses which are so characteristic after the hypodermic dose. In practically all the cases of hyperthyroidism, however the reaction is more marked and of longer duration than in a normal individual.

The reaction in hyperthyroidism to a subcutaneous dose of adrenalin is characterized by an early rise of blood pressure and pulse, varying from 10 to 50 and normally proportional to the degree of toxicity present. Along with this there is a moderate exaggeration of the symptoms, such as asthenia, tremor, throbbing, vasomotor changes, apprehension and nervousness, in short, the symptoms of which the patient complains are moderately increased and at times latent symptoms are brought out. I should say that in no case were dangerous symptoms observed after the dose of adrenalin which I used. The effect is no greater than that produced at times by the disease itself, it is transient and in several very ill cases, in which the information obtained could be of no material benefit the test was not carried out at all. In all cases of exophthalmic goitre the reaction was positive particularly in the early cases. In adenoma cases the reaction is similarly positive if the adenoma has not undergone complete degeneration. A further proof I believe that adenomata are responsible for hyperthyroidism symptoms. In the colloid goitre cases the response to adrenalin is entirely negative. One gets no more effect than if an equal amount of salt solution be used.

The technique of the "hypersensitiveness to adrenalin" test is carried out as follows:

The patient having been in bed thoroughly at rest a day or more previously and having become acquainted with the attending physician who is to do the test is assured that the examination is in no way painful and is in no way associated with any danger. It is, of course thoroughly realized that patients suffering with hyperthyroidism should be in every way protected from painful stimuli or other factors which might increase the nervousness as this would interfere with a correct interpretation of the results of the test.

Two readings are taken, at five minute intervals of the blood pressure systolic and diastolic,

pulse rate, and respiration. A note is made of the subjective and objective condition of the patient. This includes the state of the subjective nervous manifestations, the throbbing, heat and cold sensations, asthenia, and the objective signs, such as pallor or flushing of the hands and face, the size of the pupils, throbbing of the neck vessels and precordium, tremor, temperature of the hands and feet, perspiration, and any other characteristic signs or symptoms noticed. These signs are all noted previous to the injection of the adrenalin so that comparison may be made after the injection.

A hypodermic syringe armed with a fine needle which, when inserted, causes little discomfort, is then used to inject 0.5 cc. (7.5 minims) of the commercial 1-1000 solution of adrenalin chloride (Parke, Davis & Co.) into the deltoid region, subcutaneously. Intramuscular and intravenous injections were not given. Readings are then made every two and one-half minutes for ten minutes, then every five minutes up to one hour, and then every ten minutes for half an hour longer. At the end of one and a half hours the reaction has usually entirely passed off, sometimes earlier. The repeated early readings are made in order not to miss certain reactions on the part of the pulse and blood pressure that may come on in less than five minutes after the injection is made. This is particularly true of cases of active hyperthyroidism.

In a so called positive reaction there is usually an early rise in blood pressure and pulse of over ten points at least, there may be a rise of as much as fifty points or even more. In the course of thirty to thirty-five minutes there is a moderate fall then a second slight secondary rise, then a second fall to the normal in about one and one-half hours. Along with these one sees an exaggeration of the clinical picture of Grave's disease or hyperthyroidism brought out, especially the nervous manifestations. The particular symptoms of which the patient has complained are usually increased, and in addition there are brought out many symptoms which have been latent. Thus it is not uncommon to have extrasystoles brought out, after the injections of the adrenalin. The patient is usually aware of them and may tell one that she has felt this same thing a year or two previously, at which time the symptoms of the disease were more active.

The following may all or in part be found increased: tremor, apprehension, throbbing, asthenia and in fact an increase of any of the symptoms of which the patient may have complained. Vasomotor changes may be present, namely, an early pallor of the face, lips, and fingers due to vasoconstriction, to be followed in fifteen to thirty minutes by a stage of vasodilation with flushing and sweating. There may

be a slight rise of temperature and a slight diuresis.

In order to interpret a test as positive I have regarded it as necessary to have a majority of these signs and symptoms definitely brought out or increased. Thus there is at times a considerable increase of pulse rate without much increase in systolic blood pressure, but with a considerable increase or exacerbation of the objective signs and symptoms, or there may be an increase of ten points in the pulse and blood pressure and a moderate increase of the symptoms and signs, or again, there may be only slight changes in pulse and blood pressure and considerable change in signs and symptoms. These may be regarded as positive. In a word, then, one must consider the entire clinical picture produced in order to gain a correct interpretation, just as in the disease itself one cannot expect every one of the characteristic signs and symptoms to be present in order to make a diagnosis.

A normal person shows no reaction whatever on the part of the blood pressure, pulse, signs and symptoms, when 7 minims or 0.5 cc of 1:1000 adrenalin solution is injected. Many conditions simulating hyperthyroidism, such as, certain queer nervous disturbances, psychasthenia, psychoneurosis, hysteria, neurasthenia, melancholia, alcoholism, tabagism, acromegaly, arteriosclerosis, and several other diseases, gave essentially negative results. In a few cases some acceleration of pulse and slight rise of blood pressure were observed but in all cases there was a complete absence of the subjective and objective symptoms upon which I have come to lay so much stress in the diagnosis. Again in these allied conditions there might be a slight transient reaction, whereas in hyperthyroidism cases the reaction characteristically lasts from three-quarters of an hour to one and one-half hours.

The test has been of greatest value and help in the diagnosis of that large group of borderline cases resembling in some respects true hyperthyroidism, but without definite recognizable signs on the part of the patient generally or in the findings of the thyroid gland, which may not be palpably enlarged. Many of these cases have proved to be dependent upon the adenomatosis of the thyroid gland discovered at operation which was advised previously on the basis of the positive adrenalin test. Many small adenomata were found, however, too small to be palpated before operation. In this manner the uncertainties in diagnosis are produced by the disease. That the diagnosis in these cases is correct is shown by the histological evidence of functional activity in these adenomata and by the fact that a practically complete cure is accomplished in these cases by removal of the adenomatous tissue.

A further interesting feature of the reaction, showing its dependence upon the degree of hyperthyroidism present, is the fact that after operation, either in cases of exophthalmic goitre or of adenoma the sensitiveness to adrenalin is materially reduced, if not entirely removed. After excision of adenomata the sensitiveness disappears quite early because here the entire offending tissue is removed. In the cases of exophthalmic goitre, however, a certain degree of sensitiveness may persist for one cannot with safety remove the entire thyroid gland.

In several instances in which patients presented themselves for treatment, giving a history of hyperthyroid symptoms for possibly two to five years previously, but at present with practically no symptoms, and with a thyroid gland possibly slightly but not palpably enlarged, a hyperthyroid response could be elicited as indicated by the symptoms produced and by the production of mild palpitation, tachycardia, inequality in the force of the systolic beats and an occasional extrasystole, even though the heart seemed perfectly normal. Such a response indicates, I think, some damage to the heart and its regulatory mechanism during past phases of hyperthyroidism. It is interesting to have the patients volunteer further that the symptoms produced are precisely similar to those from which they suffered constantly, perhaps a year or two previously. Several patients' remarks are interesting, namely, that "Your medicine makes me feel just like my disease used to make me feel." This additional diagnostic point, and sometimes the only one discoverable, has made it possible to advise more strongly operative measures, and in many instances now, small adenomata were discovered at operation.

A very definite pre-operative adrenalin response becomes mild and almost imperceptible in many cases very soon after operation, particularly in the adenoma cases. In some exophthalmic goitre cases after a single lobectomy the reaction after two or three weeks remained about the same, and it is possible that in these cases a second lobectomy will be necessary to obtain the desired results. The reaction has been of particular value in picking out hyperthyroid cases from that large group of ill-defined conditions designated as psychoneurosis, psychasthenia and neurasthenia. In several instances of this kind in which mental symptoms predominated, and in which the examination failed to reveal any positive signs in the eye, thyroid gland or heart, there was found a mildly positive adrenalin reaction and at operation multiple small adenomata were found in the thyroid gland.

In summarizing then the following conclusions are drawn: 1. Thyroid adenomata are responsible of themselves for hyperthyroidism. They are often multiple and should be removed when-

ever it is possible to make the diagnosis. The very common belief among many physicians that they are innocuous and need no surgical treatment except when they produce mechanical pressure is incorrect. In a small percentage of cases, 2 per cent in this series, malignant degeneration occurred. Symptoms of hyperthyroidism disappear when an adenoma formerly active degenerates, only to be followed by a second wave of hyperthyroidism when a new healthy adenoma arises as is so frequently the case. Almost every form of degeneration recognized by the pathologist can occur in these adenomata. The thyroid gland itself associated with an active adenoma presents a simple colloid appearance, contains few or almost no mitochondria and is relatively inactive. The abundance of mitochondria in the thyroid cell forms a good index for judging of the activity of the tissue under consideration, whether this tissue be from active colloid goitre, exophthalmic goitre or from an adenoma, the greater the number of mitochondria in the thyroid cell the greater the functional activity of the latter.

In states of hyperthyroidism there is a hypersensitivity to adrenalin whether administered hypodermically or intradermally, which hypersensitivity is proportional to a remarkable way to the degree of hyperthyroidism present.

The reaction to adrenalin should be of considerable value in the diagnosis of obscure borderline cases of nervous disturbances, which may or may not have their origin in true hyperthyroidism.

#### BIBLIOGRAPHY

- 1 Asher, L. and Flack, M. 'Die innere Sekretion der Schilddrüse und die Bildung des inneren Sekretes unter dem Einfluss von Nervenreizung' *Ztschr f Biol* München u. Berl 1910 lv 83 166
- 2 Barker, L. F. and Sladen, F. J. 'The Clinical Analysis of Some Disturbances of the Automatic Nervous System With Comments Upon the So called Vegetative and Sympathetic States', *Trans of the Assoc of Am Phys*, 1912, xxvii 471 502
- 3 Cannon, W. B. and Cattell, McK. 'Studies on the Conditions of Activity in Endocrine Glands' II 'The Secretory Innervation of the Thyroid Gland' *Am J Physiol* Balto 1916 xli, 58 73
- 4 Cowdry, E. V. 'The General Functional Significance of Mitochondria' *Am J Anat*, Phila 1916 xix, 423 446
- 5 Eppinger, H., Falta, W. and Rudinger, C. 'Ueber die Wechselwirkungen der Drüsen mit innerer Sekretion,' *Ztschr f klin Med*, 1908 lxxi 1 52
- 6 Eppinger, H., and Hess, L. 'Zur Pathologie des vegetativen Nervensystems' *Ztschr f klin Med*, 1909 lxxvii 345-351
- 7 Levy, R. L. 'Studies on the Conditions of Activity in Endocrine Glands' IV 'The Effect of Thyroid Secretion on the Pressor Action of Adrenin,' *Am J Physiol*, Balto, 1916 xli 492 511
- 8 Oswald, A. 'Die Beziehungen der Schilddrüse zum Blutkreislauf und zu dessen Nervenapparat' *Centralbl f Physiol* Leipzig u. Wien 1915 xxxc 509 511

## THE MEDICAL TREATMENT OF GRAVES' DISEASE

By HERMON C. GORDINIER, M.D.,

TROY, N. Y.

**B**ECAUSE of the brilliant therapeutic effect of thyroid feeding in overcoming both the adult and infantile type of myxedema and allied states of thyroidal insufficiency, the medical profession naturally have waited for long in anticipation of some equally brilliant discovery for the alleviation and cure of Graves' disease or exophthalmic goitre and other borderline conditions of heightened excitability of the whole sympathetic nervous system, the result of an altered hyperthyroidal secretion thus far, however, despite much clinical observation and laboratory research, no such specific therapeutic agent has been forthcoming. It is the lack of such a special agent for the relief and cure of this disease that has caused so much distrust on part of many physicians in regard to its medical treatment. It has developed in their mind an attitude of indifference or actual antipathy, and has created such a lack of interest or abstract carelessness toward the cure and treatment of these unfortunate sufferers, that many of them have passed out of their hands into those of the Charlatan, or thoroughly disheartened and discouraged, and broken in health with extreme toxemia and cardiac insufficiency, they have sought as their last and only hope the relief that they may possibly come from the knife of some daring surgeon with results that too often reflect discredit to both surgery and medicine as the late Dr. Musser tersely expressed it, "the surgeon is apt to do too much and the physician too little." That such pessimism exists is largely due to the conflicting statements, lack of method and innumerable drugs, which have from time to time been recommended for the alleviation and cure of this affection. We must remember, however, that this disease is so protean in its manifestations, so erratic and variable as to its course subject to so many spontaneous remissions and exacerbations, and whose natural tendency is either to recovery or death from toxemia and cardiac failure or rarely to retrogression with thyroidal wasting and hypo activity with the production of myxedematous state, that it is so difficult to correctly interpret the effects of medical treatment. Under similar conditions as to treatment some cases rapidly improve others remain stationary, while others fluctuate steadily losing ground and terminate fatally. No greater responsibility confronts the general practitioner than to properly guide and treat the patient who suffers with Graves' disease. Each case should be thoroughly studied from every possible angle

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 22 1918

He should be optimistic and at the same time inspire confidence and in turn if possible exact absolute co-operation on part of the patient. I know of no other condition where treatment is so dependent on individualization as it is in Graves' disease. Every effort should be made to recognize the disease early, and especially is this true of the early atypical forms in which many of the classic symptoms may be absent. He should be on the constant watch for the acute toxic cases which are so frequently passed unrecognized or are mistaken for some of the acute infectious diseases, such as, typhoid fever, sub-acute endocarditis, acute toxic delirium, etc. Especially vigilant should he be to quickly recognize the acute toxic thyroid symptoms engrafted on the ordinary degenerative, cystic, or adenomatous type of goitre. I want to emphasize the importance of making a careful search in every case of Graves' disease, typical or atypical, to discern whether a focal or systemic infection may be the primal causative factor in exciting the thyroid to an active hypersecretion with the production of all the classical symptoms. It is interesting here to relate that Dr Wm G Thompson in reporting eighty cases of Graves' disease with acute thyroidal intoxication, states that there were 20 cases with acute tonsillitis or quinsy, a ratio of one to four, and ten other patients gave a history of repeated attacks of bronchitis, severe coughs and colds, la grippe and pneumonia. Cases with these minor infections were notably frequent among the febrile goitres, sixteen examples being noted in forty-three cases. In many instances the tonsillitis, either accompanied or shortly preceded the acute febrile toxic cases of Graves' disease. I have seen two typical cases of Graves' disease each subject to repeated attacks of acute tonsillar infections, clinically cured after two years' of observation with rest and the enucleation of the diseased tonsils.

Six years ago I saw in consultation the case of a boy nine years of age, with acute thyroidal intoxication appearing during the course of a severe scarlet fever infection. He was extremely toxic, had a marked fine tremor of his extremities, a very rapid, feeble, but regular pulse at the rate of 160, a temperature of 105, he was delirious, had distinct exophthalmus, and an enlarged soft elastic, very vascular thyroid, over which was heard a continuous humming-top sound, and a soft systolic bruit. His condition seemed very grave. The use of the Beebe serum was considered, but because of the severe scarlet fever infection it was deemed unwise to administer it. However, with the intermittent local use of ice both to the thyroid gland and præcordium, together with elimination and absolute rest, he gradually improved and in the course of three months all manifestations of the hyperthyroidism

had disappeared. Recently I saw his physician, who states that the boy has remained perfectly well and shows no exophthalmus, thyroid swelling or tachycardia. This case seems definitely to prove that a general toxæmia from an acute infection may excite acute pathologic changes in the thyroid gland with hypersecretion and the production of the Basedow symptom complex.

It is because of the above mentioned cases and the numerous instances recorded in the literature where focal or general infections seem to be responsible for the initiation of grave toxic thyroidal states that I deem it very essential in every case of Graves' disease, typical or atypical, to locate and eradicate by surgical or medical means, any type of local or general infection such as, pyorrhea, diseased tonsils and adenoids, sinus, middle ear and mastoid infections, gonorrheal or other infectious arthritides, tubal disease, gall bladder or appendicular infections, chronic constipation, colonic stasis, etc. A number of cases of Graves' disease are recorded where a complete cure has resulted from the relief of such infections. It is interesting here to note that J W Vaughan states that Dr Morse was able to cultivate by the Rosenow method from the thyroid glands removed from two typical cases of Graves' disease the streptococcus viridans.

With these facts in mind it is necessary again to emphasize that one of the most essential points in the successful treatment of exophthalmic goitre is the removal of all sources of infection, either focal or general.

The most rational therapeutic means at our command in the alleviation and cure of Graves' disease is rest both physical and mental, so as to secure tranquility of the mind and perfect rest of the body, the type of enforced rest so long ago successfully instituted by the late Dr S Weir Mitchell in the treatment of neurasthenia and the group of mild psychoses. In addition thereto I would enjoin exposure to abundance of open fresh air and sunshine in a dry salubrious climate at a moderate elevation. Such a type of rest cure as we are accustomed to advise our patients with early active tuberculosis, whether with such cure should be associated partial or strict isolation, is largely dependable upon the social status of the patient, and the type and severity of the nervous and cardiac manifestations. One of the requisites in properly carrying out a strict rest and isolation cure is to have the co-operation of an intelligent, cheerful and optimistic nurse, both resourceful and with good judgment and one, if possible, who has had considerable experience with nervous patients. It is remarkable what a calmative and soothing effect such a nurse may have in these cases. Whether the rest cure should be undertaken at home in the quietest room in the house and as far away from the family as possible, or at a

well conducted hospital or sanatorium, is a debatable question and should be decided on the merits of each case. Personally while I have treated several cases successfully at home, I am convinced that in most instances the results obtained are much better in a hospital where every facility is at hand for properly carrying out the treatment. The time is not far distant when every hospital will have metabolic wards attached where the results of the rest cure, hygienic and other methods may be controlled by the study in each case of the basal metabolism.

The probable length of time the patient should rest can only be determined by the type of case, the severity of the toxæmia and the symptoms relating to the cardio-vascular and nervous systems. The rest cure should not be too lightly or indifferently undertaken. It should be carried out in a most systematic manner and it is my judgment that but few patients should be treated in an ambulatory fashion. In order to gain the confidence of the patient it is wise to acquiesce them with all the facts of the case and to state explicitly if possible, the probable length of time it may take to effect a cure, whether several weeks or months. One cannot too strongly emphasize the value of bed rest and other hygienic measures in the care of the early manifestations of this disease, for it is the consensus of opinion of internists that with this treatment most of the early cases are permanently cured, whereas, without proper rest these cases may become progressively worse and often lapse into the most serious types of the disease. It is therefore, our duty to make the same effort to recognize the early or incipient case of Graves' disease, as it is to recognize a case of incipient tuberculosis. These borderline or early cases usually show vasomotor instability, slight or great nervous excitability, easy fatigability, slight or rapid weight loss and persistent tachycardia, with constant or occasional vascular excitability, throbbing of the large vessels and especially of the abdominal aorta or moderate increase in size of the thyroid gland over which thrills are felt and vascular murmurs are usually heard or the gland may not be visibly or palpably enlarged. The exophthalmos and associated ocular manifestations are often missed, while a delicate fine tremor of the upper extremities is a very early symptom. A definite rather general falling out of the hair of the scalp is often observed very early in these cases and is of considerable diagnostic value. These cases oftentimes have a slight elevation of temperature toward late afternoon or evening and are often subject to severe sweating. The detection of a capillary pulse or with the ophthalmoscope pulsation of the retinal vessels may also be helpful in the diagnosis.

Riesman's sign, a soft systolic murmur heard over the eyeballs with the lids closed is present

in a goodly number of cases, but owing to the spastic condition of the eyelids and the resulting loud muscular sounds thus produced, it is often overlooked.

Patchy or diffuse pigmentation of the skin while it may occur early, is most often observed in the more chronic or advanced cases. This pigmentation may be so marked that it closely resembles that of Addison's disease, it is possible that it may have as its cause an associated supra-renal insufficiency.

Goetsch has shown that the percutaneous injection of a minimum of 1 to 4,000 sol adrenalin chloride will in Graves' disease show a very prompt skin reaction, a large wheal like wheal. Such a reaction may also be present in extremely nervous individuals. The real diagnostic value of the test is its negativity. I have tried this test recently in ten cases at the Samaritan Hospital, both mild and severe and have always found the reaction positive. A test said to be of a far greater diagnostic value is the subcutaneous injection of 7 m of sol adrenalin chloride when if hyperthyroidism is present all the symptoms are quickly exaggerated and characteristic blood pressure changes are induced. Loew's adrenalin mydriasis test is an early diagnostic sign of value. A careful white cell count is also of value as first pointed out by Dr. Kocher, showing in the early cases a leucopenia, with a diminution of the polymorphonuclear and a decided mononucleosis. The coagulability of the blood is nearly always somewhat delayed.

The best guide as to the length of the stay in bed is the stability of the nervous system and the condition of the pulse. If after rest the nervous system becomes calm and the pulse rhythmic, with a rate at or just above the normal and remains so with but slight fluctuations, the appetite good and the weight loss ceases or there is an actual gain, she then may be permitted to rest for an hour or two on the sofa or in a comfortable chair or if weather conditions permit out of doors in a hammock and later be allowed to walk about the room, corridor or veranda short of being fatigued or suffering from palpitation. Stair climbing should be interdicted for a long time and especially is this true with cases showing myocardial insufficiency. It is unnecessary to go more into detail with regard to rest both in the mind and severe cases of Graves' disease, its value is recognized alike by the internist, neurologist, and conservative surgeon.

It is interesting here to note that the statistical study of Hile White is strongly corroborative of the great value of rest in this disease, for he states from his study that 50 per cent of the cases were cured by medical means that is, rest and other hygienic measures and 80 per cent of these remained permanently cured.

McCarrison in his recent work on the thyroid gland states that with rest and medical means in 3,523 cases so treated and recorded in the literature, recovery occurred in a little over 50%, in nearly 38, 5/10% of cases the condition was alleviated or became chronic, while death resulted in 11, 8/10%

MacKenzie's and Musser's statistics are equally corroborative

DuBois has found working with the Sage calorimeter that the increase in metabolism is equalled in no other disease, and is strictly proportional to the severity of the clinical symptoms. With rest alone in cases observed at Bellevue Hospital, he found a fall in metabolism from 10 to 15 per cent and he regards rest as one of the most important means to alleviate and cure this disease

In conjunction with rest, the question of feeding is of great importance in the treatment of Graves' disease. Considerable difference of opinion, however, exists as to the amount and kind of food necessary. Most sufferers with Graves' disease are thin and curiously enough we rarely encounter one that is fat except in the young. The degree of emaciation is dependent upon the severity of the symptoms. In mild cases the loss of weight is usually but slight, whereas, in the severe toxic cases and particularly in those who suffer with severe periodic attacks of diarrhea, the emaciation is often extreme. The weight loss is due to the rapid oxidation of the body tissues from the increased metabolic activity, the result of the hyperthyroidal secretion, as is shown by the enormous increased gaseous exchange and nitrogen elimination. Our endeavor should be to repair the loss and increase the body weight by increasing the caloric value of the foodstuffs administered. It has been my custom to allow plenty of milk, cream, butter, and all milk products, bread, toast, eggs, cereals, rice and other carbohydrates and fats, green vegetables and fruits, and except in severe toxic cases, fish, chicken, lamb and beef in strict moderation and pure soft water always in abundance to aid elimination, all stimulants, tobacco, tea, coffee and spices pickles and most acids should not be allowed.

DuBois' work with the calorimeter proves that the specific dynamic action of proteins and carbohydrates in exophthalmic goitre patients, is not appreciably different from the normal, and that there is no significant difference between the effect of meat and same amount of protein in milk and eggs. He states that the protein ratio in these cases should contain from about 12 to 15 grams of nitrogen a day which is the amount ordinarily consumed. Despite these experiments I believe that animal protein should be given very sparingly and in the extremely toxic cases should for a time be absolutely stopped, for we

know that in excess it produces an increased thyroidal secretion. In connection with proper feeding it is necessary to emphasize the importance of perfect elimination through the bowels, a daily evacuation is very essential. This may be secured with proper diet and plenty of water and liquid paraffin or it may be requisite to have recourse to laxative drugs, enemas and colonic irrigation. An occasional blue pill or a those of castor oil is oftentimes a very wise measure in those of constipated habit. I have found sodium phosphate given before breakfast a valuable means to correct the mild forms of constipation in this disease.

Medicinal treatment is uncertain in its results. Drugs that have done good in some cases have proven ineffectual in others. To attempt to enumerate the various drugs which have been recommended for the alleviation and cure of this affection would be a useless task. I have made use of many of them and while perhaps benefit slight or great have come from some of them, it has always been questionable whether rest, proper feeding and other hygienic measures were not alone responsible. I would, however, like to emphasize strongly the value of the neutral hydrobromide of quinine in conjunction with rest in the treatment of the disaffection. The use of this drug was suggested by the late Dr. Forchheimer of Cincinnati. It has been my custom to use it in capsules of from 3 to 5 grains, three or four times daily, and to continue this dose until tinnitus occurs, and then reducing the amount just short of this physiological effect. The secret of success in its use is to continue it over a long period of time, months or years with an occasional interruption only. When the symptoms are under control it is wise to decrease the dose to one or two capsules a day or perhaps to give the same dose but once or twice a week. Usually within a few weeks one notices a lessening of most of the symptoms, especially is this true of the tachycardia, the nervous and vasomotor instability and the tremor, the thyroid frequently becomes by actual measurement decreased in size, the exophthalmos, however, is the last to disappear.

Dr. Forchheimer states that he has treated 71 cases with but six failures, i. e., 82% were cured.

Drs. Jackson and Mead of Boston found that of 56 cases treated at the Massachusetts General Hospital with this drug and under observation for three to nine years, 76% had no signs of symptoms for two years, while 13% had been benefited and only 11% were failures. They suggest that the drug may calm the overstimulated sympathetic nervous system and thus put an end to its stimulation of the thyroid gland and the vicious circle thus created.

Huchard suggests that it acts as a tonic to the heart and that it has vaso-constrictor and vagus

inhibitory effects. Phosphorus is another drug with which I have had considerable experience and can speak strongly in favor of its use in the treatment of this disease, if administered in freshly prepared pills of from 1/100 to 1/25 of a gr., thrice daily, over a long period of time. It has had in my hands a salutary effect in the relief and cure of these cases and especially those that develop in early adult life, it is quite remarkable what a tolerance for the drug these patients have. I have frequently given phosphorus with short periods of interruption for a year or two without the slightest unpleasant consequence. I have watched for four years six typical cases of exophthalmic goitre treated with phosphorus, who at present have no signs of the disease. It is interesting in this connection to note that Kocher lands very highly large doses of sodium phosphate given three or four times a day for the treatment of this disease. He believes that it acts as a direct antidote to the iodine-containing substance of the thyroid gland. Although drugs of the digitalis group are constantly in use in an effort to reduce the cardiac rate, in my hands they have as constantly failed and I have found them only of avail in the treatment of cardiac insufficiencies and associated arrhythmias of the later stages of this disease. In the early stages of the disease before myocardial insufficiency occurs, rest and the local intermittent application of cold both to the thyroid gland and precordium by means of the ice bag or Leiter's coil has had the most tranquilizing effect in reducing the pulse rate, of any means that I have employed.

In my early practice I used to use for this same purpose increasing doses of tincture of strophanthus continued over a long period of time and while in a few cases good results occurred, for the most part its effects were disappointing. For the nervous excitability and insomnia I have found the hydrobromide of quinine most useful and have rarely been obliged to use hypnotics of opiates. The occasional use of large doses of bromide at night is perfectly justifiable but I want to deprecate their continuous use, and I would also add a word of warning about the use of opium or its alkaloids unless for some very special purpose. Valdol although now off the market has worked very well in some cases to relieve the nervous erethism and induce sleep. A cleansing bath each morning followed by one or more cold ablutions or a cold salt rub with gentle friction are comforting and oftentimes a warm bath at night will induce sleep. While the patient is undergoing the rest cure general gentle massage is of considerable value.

My experience with electricity in this disease while limited to the application of galvanism to the cervical sympathetic and the use of Faradism after the method of Vigoroux and Chiret has shown no permanent improvement in the few cases where it has been systematically carried

out. Some years ago while working in a large neurological clinic at Boston I had the opportunity of watching the effect of the static wave current on perhaps a dozen ambulatory cases of Basedow's disease, and although absolutely unbiased I could see no definite signs of improvement in any of them. It has seemed to me that electricity was valuable in this disease only from the standpoint of auto suggestion.

There seems to be no unanimity of opinion in regard to the value of the various glandular products or the specific sera in the treatment of Graves' disease. By some physicians they are highly extolled whereas others regard them of no special value. In an experience extending over a number of years I have had occasion to use in a considerable number of cases, the various ductless gland products as well as thyrodoxin and thyroelectric serum of Beebe and Rogers, and while excellent results have occurred in a few cases, I have been impressed with the fact that perhaps rest and other hygienic measures may have been in large part responsible.

Hoppe, because of the intimate relations between the function of the thyroid gland and ovaries and assuming a hypo-activity of the ovaries in Graves' disease has administered corpus luteum to about 20 cases of Graves' disease with most gratifying results.

I have had no personal experience with Roentgen therapy in this disease. Judging, however from a study of the recent literature, experienced observers regard irradiation as being a real therapeutic achievement in the treatment of Basedow's disease. They state that the pulse rate is nearly always slowed, the tremor and nervous system improve from the start, the gland rapidly diminished in size in many cases, the throbbing and vascularity are greatly lessened and the gland becomes much softer in consistency. The body weight practically always increases. Faltin in his work states that he has witnessed good results from irradiation in several cases, there followed disappearance of the glycosuria, diarrhoea and tremor and an increase in weight.

Schwartz, from the first medical clinic at Vienna has reported 40 cases in all of which after irradiation the nervous symptoms have disappeared and the tachycardia in all but a few cases. Two-thirds of his cases showed gain in weight and one-half of the cases showed regression of the exophthalmos and in one third of the cases the gland was decreased in size. Waters of Hopkims in 1915, reports 16 patients who received 18 treatments with eight cures, seven markedly improved and only one failure.

Stoney reports 41 cases with 14 cured and 22 much improved.

Fischer reports 12 cases cured for over two years and four improved.

The advantages of which this treatment possesses according to Malcolm Seymour, may be summarized as follows First, no fatalities Second, no resulting scars Third, no interference with the patient's occupation Fourth, it is painless and causes no inconvenience and if unsuccessful an operation may be done with less risk because of the very favorable action of the rays on the associated enlargement of the thymus gland and the reduction of the vascularity of the thyroid He states that the treatment should be undertaken only by those thoroughly experienced in Roentgen therapy The dose should be most accurately measured If used in a haphazard and unscientific manner, serious or total atrophy of the gland may result with the production of myxedema, several such cases have been reported in the literature

The following conclusions may be presented

The ideal treatment for Graves' disease is enforced therapeutic rest

(1) If recognized early most of the mild or incipient cases are curable by prolonged rest, hygienic and medical means

(2) 50% of the more advanced cases are curable by the same methods

(3) All cases that have undergone for a reasonable length of time careful medical treatment and have shown no improvement or have progressed or present pressure symptoms, should be placed at once in the care of the experienced surgeon skilled in thyroid work

(4) Cases showing myocardial insufficiency or serious arrhythmias as alteration, fibrillation, or flutter should be treated medically

(5) X-ray pictures of the chest should be taken to discover extraneously placed, accessory or dipped thyroids and to determine the size of the thymus gland

(6) Success in treatment in each case depends on careful individualization

## SURGICAL TREATMENT OF GOITRE

By CHARLES WALLACE WEBB, M.D.,  
CLIFTON SPRINGS, N. Y.

**K**OCHER in writing about diseases of the thyroid gland, says "The indications for operative treatment are various We long ago abandoned the belief that every goitre should first be treated with internal remedies and referred to the surgeon if internal remedies failed

"1 Internal treatment is useless in struma nodosa with nodules in process of secondary degeneration Degenerative nodules can also be recognized by changes in their consistency Thus, all colloidal degenerated nodules, as well as fibrous calcareous hemorrhagic, and cystic nodular goitre, must at once be turned over to the surgeon

"2 Diffuse colloidal tumors that have resisted several brief periods of iodine medication must be referred to the surgeon, especially if they have already given rise to functional disturbances

"3 All goitres that cause pressure symptoms must be treated by operation

"4 The same is true of those that cause cardiac symptoms, and

"5 Of goitres that are abnormally situated, especially struma profunda and introthoracic, which are very dangerous if the tumor continues to grow

"6 If a goitre develops very suddenly and grows very rapidly, and if the shape and consistency are unusual, it must be treated by operation, regardless of the patient's age

"7 A goitre showing sensitiveness on pressure especially if it causes spontaneous pain, must be referred to the surgeon"

If I quoted further the classification and the differential diagnosis given by Kocher and others, it might help further to emphasize that what we lesser lights need most is something more simple and workable, to help us determine just what type of thyroid disease with which we are dealing

That some types of goitre seem to respond to palliative treatment we all know from experience The surgeon often runs across a case that he thinks has been made worse by treatment, which further emphasizes the necessity for differential diagnosis Any work that might help in giving us a clearer working basis seems what we most desire

Now, it seems to me that this work of Goetsch's on the mitochondria is a long step toward a better classification of thyroid conditions And also, the adrenalin test aids materially in diagnosis

If we accept what I think he clearly shows, that the mitochondria are present in proportion to the amount of activity, or over-activity, one should say, then for a fairly dependable working basis, diseases of the thyroid gland can be divided into three classes

- 1 Colloid
- 2 Adenoma
- 3 Exophthalmic

In our own work, we find this simple classification of great value in determining the surgical treatment of thyroid disturbances By physical examination, history and application of the Goetsch adrenalin test, we feel that we can usually determine which class a patient comes under

A correct diagnosis and a proper classification of the type of goitre with which one is dealing, is the most important consideration in the surgical treatment of thyroid conditions. It is equally important for the medical man, probably even more so For when the medical man real-

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 22, 1918

izes this, there will be fewer cases coming to surgery with their best chances of recovery gone. The surgeon will no longer try to run a bad exophthalmic case through the same operative procedure he applies to a strong individual with appendicitis.

Inasmuch as each of these different types of goitre may require different surgical treatment, I shall take them up separately, but briefly.

1 *Colloid*—This type is often called the simple or parenchymatous goitre. It is doubtless the type that comes and goes, and is usually considered non-toxic. Its symptoms are mostly those of the mechanical effect, although some observers think this type causes an undue strain on the heart, even though it is not of sufficient size to cause pressure on the large vessels and the trachea.

If the Goetsch test is negative, there is no indication for surgical treatment other than to remove the deformity or to relieve pressure symptoms.

Some of these cases seem to be thrown into a state of activity by infection, acute or chronic. This may progress to a typical hyperthyroidism. We have had five cases of this type subside after removal of infected tonsils and teeth and about an equal number of cases that required lobectomy of the gland before the symptoms subsided.

Also, in some of our cases of the exophthalmic type, I have found a much more rapid recovery after the removal of infected tonsils or teeth, or both. In these cases, of course a reasonable length of time is allowed to relapse after ligations and lobectomy. In some of these cases the improvement has been so rapid after removal of infection that it suggests the infection as the etiological factor in the onset of the disease.

Colloid goitres when taken in time, present no more surgical risk than a simple appendix case. If the gland is a large one requiring a long operation, ether anesthesia adds to the risk. A light anesthesia is always better than a deep one. It seems to lessen asphyxiation during operation and post-operative pneumonia occurs less frequently.

2 *The Adenomata* We failed to appreciate the importance of this type of thyroid disease until this work of Goetsch's appeared.

The gland may show practically no enlargement, but in many cases a small nodule can be made out seemingly more dense than the surrounding thyroid tissue. Hyperthyroid symptoms may be present when the adenoma is too small to palpate. The effect on the health of the patient may be a psycho-neurotic disturbance more than the physical. However, I have noted a low kidney function in some of these cases, which markedly improved a short time after operation which might indicate some effect on the sympathetics.

The adrenalin test is positive when the adenoma is active, and therefore of greater value in diagnosing these cases than of any other type.

Palliative treatment might well arrest the development of the hyperthyroid symptoms here, but the adenoma remaining its effect continues, and it is always a pilot light to ignite another conflagration. The possibility of these cases becoming malignant has to be considered also.

Therefore, it would seem that surgical treatment is the treatment of choice in the adenomatous cases.

The operative risk in these cases is no more than in colloid goitre, provided, of course, there are not present already marked heart symptoms. Such being present, the same care and precaution one should apply to exophthalmic cases must be employed.

But there is one point in operating on these cases that cannot be emphasized too much, and that is the importance of making sure you remove the adenoma. The failure to do this will no doubt explain the great majority of cases that are little benefited by operation, or the recurrence after operative procedures.

A case I might cite to illustrate, was a man around the age of 40, history of an enlarged gland for some years, which seemed to give him no trouble, that he could attribute to that. Yet a careful history taking showed that he had most of the symptoms we attribute to submerged hyperthyroidism. Then rather acute hyperthyroid symptoms set in and at the time the patient consulted the surgeon, it apparently was a case of exophthalmic goitre. After preliminary rest in bed, ice caps to heart and neck, preliminary ligations and later lobectomy of the right side, which was the largest at the time of operation, prolonged rest the patient's condition greatly improved and he was able to return to work. After about two years the remaining glandular tissue began to enlarge and hyperthyroid symptoms manifested themselves though not so severe as formerly, and not constant. The adenomatous symptoms during this two year period were still present at least the history would so indicate.

In a quiescent period I did an adrenalin test and found it quite positive. The operation was quite difficult because of the adhesions and scar tissue of the former operations. For that reason I decided to do an enucleation, and to my surprise, a discrete nodule about the size of a large lemon, was easily shelled out which proved to be an examination of adenoma. The gland was then thoroughly explored to make sure no small nodules remained. The patient made a quick recovery, and when I saw him on the street two months after he was working regularly, and voluntarily offered the information that it was the first time he had felt like himself since he first noticed the enlargement in his neck.

No matter what type of goitre one operates on, if he does only a lobectomy, the other side should be thoroughly explored for nodules.

These types of cases, unless there have been present marked hyperthyroid symptoms or complications, such as injury to heart and kidneys, do not require prolonged after-treatment. They usually get out of the hospital in ten days or two weeks, and slowly increase their activities as their strength returns. The prognosis and result is good. Even a very badly damaged heart will show great improvement.

**3 *Exophthalmic Goitre***—The diagnosis is easy, excepting in a period of remission, or in early cases, when the adrenalin test will clear it up. It presents more difficulty in treatment than any other type, for reasons which are obvious. We have seen very few cases of any duration that have not run the gamut of treatment, from iodine to snake-skin, usually including Christian Science and osteopathy. Too often we think that they have been made worse by some of the treatment they have undergone. Always there has been the loss of valuable time, for the time element is very important in these cases. The heart that has been whipped up to its highest speed for six months can hardly be expected to recuperate as well had it been under the whip only one month.

The surgeon is always skeptical of the value of palliative treatment in these cases, and for the reason that he seldom sees them until after treatments have been tried. If these cases could be referred to the surgeon after rest in bed with some sensible line of medication, had failed to abate the symptoms, a good many more of them would be saved, and they would not be such a nightmare to the surgeon.

Before any operative procedures, the patient should be placed in bed, with not more than one pillow, ice caps to heart and neck, under the quietest surroundings possible.

For the operative work we find Dr Grile's anoci methods very satisfactory. As yet there is no way of determining just how much one of these cases will stand, and for that reason it seems that preliminary ligations are advisable. In addition to reducing the activity of the gland, it gives valuable information as to the patient's reaction.

In our operative work we find nitrous-oxide oxygen anaesthesia most satisfactory. An anaesthetist well trained to administer it greatly adds to the comfort of the surgeon, and we never use any other anaesthesia on goitre patients.

The time for preliminary treatment varies with the severity of the disease. If the pulse remains below 120 for two or three days, we start in with a placebo hypo three or four days before ligation, then have the patient breathe in and out of the nitrous-oxide apparatus, first using only oxygen, and daily increasing the

nitrous-oxide so that on the day before operation they are put entirely to sleep for just a moment or two. They usually regard this as part of the preliminary treatment, and it thus eliminates much of the reaction to psychical excitement. The ligation is done right in bed or the patient, after being asleep, is placed on the stretcher, on which has been placed the goitre frame, rolled in the operating room, raised to position, but not moved to operating table, thus making the procedure less complicated. On the morning of the operation morphine and hyocine is substituted for the placebo, but given in sufficient time to take effect. Infiltration of the skin with 1-500 novocain, aids in the anaesthesia. No adrenalin is used in this solution because of its possible excitatory effects in hyperthyroid cases.

The superior thyroid artery and veins are then ligated as rapidly as possible, through a small incision placed in a wrinkle of the neck skin. One or two stay-sutures are placed in the platysma and subcutaneous tissues, fine black silk in the skin, one small, soft rubber tube with wick protruding from outer edge of wound for drainage. It is sometimes three or four hours before the patient realizes they have been operated upon, although they are awake as soon as the anaesthesia is discontinued. This, of course, greatly lessens the excitement, and many of these patients will show very little reaction.

The amount of reaction and the response to the reduced function of the gland determines whether a second ligation is advisable, and how long a period should elapse between ligations and lobectomy.

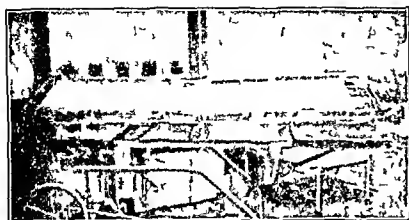
The time elapsing between the ligations and lobectomy is more or less arbitrary, somewhat depending upon the severity of the disease and the amount of improvement following the ligations and rest.

In the severest type of cases, when the tone of the heart improves, the dilatation decreases, and the pulse rate stays around 100 or lower, we feel that lobectomy is then a fairly safe procedure.

Even after ligations and the subsequent improvement, it seems better to eliminate any unnecessary nervous strain, so we try to follow out Crile's anoci. A hyperdermic of morphine  $\frac{1}{8}$  and hyocine  $\frac{1}{200}$  is given two hours before operation and repeated fifteen minutes before operation if the patient is not drowsy.

We like the Kocher position. If one's operating table cannot be adjusted to the double incline position, a frame like the cut can be made by a blacksmith, and it greatly aids in keeping the patient in the right position.

The nitrous-oxide-oxygen is started before the patient enters the room or as soon as brought in, carried along lightly during the preparation, and increased in depth when the operation is begun.



is peeled away from the posterior capsule, thus avoiding the parathyroids, and this also lessens the danger of catching up the recurrent laryngeal nerve.

The opposite lobe is then thoroughly explored for possible adenomata and if any are found they are removed. If the other side is very much enlarged, it is reduced to a size approximately that of the normal gland.

After all bleeding points are controlled, the muscles are brought together with catgut and if the platysma and subcutaneous tissue is approximated with small catgut suture, a better scar results. We leave a small wick drain extending from one edge of the wound and this is removed within twenty-four or forty-eight hours. These patients seem to have less reaction when drained.

The skin is closed with fine black silk, and this is removed on the fifth or sixth day.

Practically this same procedure is followed in all cases of lobectomy.

The simple cases of goitre run a post-operative course about that of any other major operation.

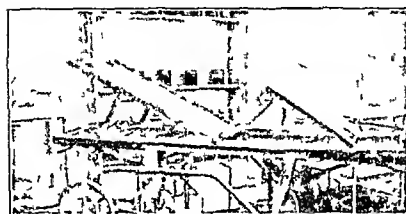
The exophthalmic type requires special attention. They are kept flat in bed, with ice to the heart approximately three weeks. My experience in trying to control the heart rate with drugs has been very unsatisfactory. If the body fluids are kept up, they seem to do better. If nausea and vomiting is present, salt or Fisher's solution is given per rectum, 400 c.c. q. 4 hr. If the patient has any of the so-called symptoms of acidosis the Fisher's solution seems more beneficial. If fluids are not retained per rectum this Fisher's solution is given intra-venously. I have noticed in some extremely bad cases an almost complete change of the picture in a few hours after administering 500 c.c. of Fisher's solution intra-venously. Bromides, trional and codeine suppositories have a sedative effect on some cases.

The value of rest following operative treatment of the exophthalmic cases is quite as important as operative procedures. This should continue three to eighteen months, largely depending upon the damage to the heart.

In some of the very extreme hyperthyroid cases we think the injection of boiling water into the gland of value as a preliminary procedure.

We also administer Fisher's solution intra-venously which I am quite convinced has greatly diminished the severity of symptoms and made operative interference much safer in some of our cases.

All of these cases give an acetone odor to the breath. What this indicates, I do not know. We now have a method of measuring the amount of acetone put off in the breath. In one of our recent cases the patient was putting out more



We usually do the Koehler operation. The skin is infiltrated along one of the wrinkles just above the clavicle and of a length sufficient to give a good exposure. The skin flap with the platysma is dissected upward as far as the Adam's apple. This exposes the sternohyoid, sterno thyroid and omo hyoid muscles which are divided between crushing forceps. The sterno-mastoid muscle is then retracted to one side and the gland exposed. The superior pole is first loosened up, the vessels ligated and the gland then loosened from the trachea in the upper region. If there is present any glandular tissue extending upward from the isthmus this is then loosened and excised. The lower pole is then exposed the thyroid inn. veins ligated the isthmus loosened up and divided. The gland is then dissected away from the trachea, the vessels clamped but not ligated until later. The gland

than eight times the amount of acetone in a given time than a normal person does. Yet this patient showed no increase in acetone bodies in the blood, nor was the blood  $\text{CO}_2$  decreased, and there was a very faint trace of diacetic acid in the urine. Certainly there is a marked disturbance of metabolism which will stand a lot of study. We are now running all our cases through this study, and hope to report results at a later period.

#### TO SUMMARIZE

The great need in the surgical treatment of thyroid conditions is to know with what type of goitre we are dealing.

The adrenalin test is of value in determining this.

The proper treatment is determined by the type of the disease and the condition of the patient.

#### Discussion

DR SAMUEL STERN, New York City. I think it is very difficult for us to overestimate the importance of the papers we heard here this afternoon. The thyroid is finally coming into its own. We begin to realize more and more every day the tremendous importance that it bears to general metabolism in every respect, and the investigations which Dr Plummer\* and Dr Goetsch have made and are making, are extremely important in helping us to solve the problem.

My experience in the treatment of exophthalmic goitre has been chiefly with radiotherapy. Within the last seventeen years (I don't think that many of you realize that radiotherapy goes back as far as that, but it does) I have treated probably 250 cases of various classes of goitre. I rule out the cystic variety, because I can dismiss them with one word—they don't yield to radiotherapy.

The action of the ray on glandular tissue is very definite and well known by this time. In small doses it has a stimulating effect upon the secretion, in large doses inhibitory, and in very large doses we may even go on to the point of atrophy.

Now, the question as to what you are going to accomplish in these cases depends entirely upon your technique. If you under-ray them you are not going to accomplish anything. Probably your thyroid will functionate more than it did, and produce more secretion. If you go beyond a certain point you run the chance of producing a complete atrophy, and stop the action of the thyroid gland entirely, so the technique must be very carefully carried out to the point where you accomplish the necessary inhibitory action upon the functions of the cells to the extent to which you want to limit them.

This seems a very difficult and complicated problem, but as a matter of fact it is rather simple if you follow carefully worked out formulas. It can be done, and in the cases that I have treated—some of them go back a great many years—the results have been extremely satisfactory, and I am glad to say that they are getting more satisfactory every year as our knowledge of the gland, and our knowledge of radiotherapy increases. We are gradually reaching that point where I can safely say that the time will come when practically no case of hyperthyroidism will have to be operated upon.

I believe that with medical means, probably, in addition to our radiotherapeutic methods, we will reach that point where we can give relief to every one of these cases. Now, the manner in which these cases yield to treatment is quite well known by this time. The first symptom that will yield is the nervousness. Shortly after you have begun your treatment your patients will tell you that they are less nervous and that they sleep better. The family will report to you that they are in much better humor. They are able to do things for themselves very much better than they have been in the past.

The next symptom that will yield will be the tachycardia. It is very difficult to get the exact pulse rate of these patients at a physician's office because they are very nervous, and the mere fact of their coming into your office will generally increase the pulse rate considerably. The best method is to let some member of the family, or the nurse, if they have one, take the pulse at the patient's home and bring you the report.

The next point to yield will be the size of the thyroid. You will generally see this gradually diminish as time goes on. In some cases it disappears entirely. In other cases it diminishes very little, but in practically the majority of cases there is considerable diminution.

As far as the exophthalmos is concerned, that is the most difficult symptom to deal with. Up to within the last year or two, I might say that very few cases of exophthalmos showed any improvement whatever, but within the last year, or within the last two years, since we have adopted a new technique which depends upon the use of deep filtered rays for all of these cases, we have been able to accomplish a little more, and within the last few weeks I showed four cases at a medical meeting where the exophthalmos practically entirely disappeared.

DR ROBERT T. MORRIS, New York City. Dr Plummer compared thyroid hormone with chlorophyll. Chlorophyll transforms energy only in the presence of another energy, light energy. Perhaps thyroid hormone acts quantitatively in over-activity or under-activity in the presence of an added energy, that of some enzyme from a

\* Dr Plummer's paper will be published in a later issue of the JOURNAL.

toxin for example. Those of us who applied our associative faculties over the whole range of papers in the symposium this afternoon must have been impressed by the positive testimony offered by Dr. Gordiner bearing upon this latter point. This is in line with my own observations. I operate much less frequently now than previously in cases of exophthalmic goitre because it has become my custom to make a search for all foci of infection and for all peripheral irritations before proceeding to any operative work.

Concerning the question of special radiation aimed at the feature of exophthalmos, it would seem to me that is the feature of exophthalmos is caused by toxic spasm of Lundström's muscle in response to toxic over-stimulation, any resource which would lessen toxic over-stimulation would lessen the phenomenon of exophthalmos. The latter does not require special attention.

My second question for Dr. Plummer is this: What relation may there be between thyroid hormone action and increased permeability of cell membranes? When considering illnesses we have to think of the body in terms of mechanics. The body is a colloid machine for transforming potential energy into kinetic. Under ordinary circumstances there is an irregular distribution between the ions on one side of a cell membrane and those upon the other side. This results in a difference of potential which presumably makes its impress upon the protoplasmic electrolyte within the cell. Does the thyroid hormone increase the permeability of the cell membrane by way of osmotic pressure adhesion or some other physical force in such a way as to allow of increased activity of ions grouped about the cell membrane when this hormone is in excess and does it lessen the permeability when it is quantitatively below normal?

DR. GRANVILLE T. MTLACK, Wilkes-Barre, Pa. The papers that we have just listened to have been of much interest. The paper by Dr. Plummer, on the function of the thyroid, is of exceptional value and it will undoubtedly revolutionize in a great measure the treatment of many of the diseases of the thyroid.

Dr. Webb has covered very thoroughly the surgery of the thyroid and he leaves very little to be added.

The two types of toxic goitre, the toxic non-hyperplastic (of Plummer), and the toxic hyperplastic, the true exophthalmic goitre, are the types that usually require surgical treatment.

The toxin causing the symptoms may be the same in each but they differ very much in their clinical history, symptomatology and pathology.

The toxic adenoma is definitely surgical. Palliative measures are not curative and giving these cases iodine in any form increases their symptoms.

The exophthalmic goitre will improve many times by certain procedures and a good percentage will get well without surgical interference, or any other interference. It is pretty well recognized that a large per cent of exophthalmic goitre will require surgery for its cure.

DR. NATHAN W. SOBLE, Rochester. I would like to ask whether the reader of the paper has any knowledge of the effect of adrenalin in therapeutic doses, in cases of hypothyroidism? We frequently see women at about the menopause, who present symptoms of mild functional disturbance of the thyroid gland. These symptoms are fatigue, marked constipation, insomnia and other characteristic signs of the disease. When we give these patients thyroid, they seem to improve up to a certain point. I have wondered whether the addition of adrenalin would be of any value? In view of the fact that the latter drug seems to increase the symptoms of hyperthyroid cases it would seem as if it might be of some aid in the hypothyroidism. I would like also to ask a question of Dr. Gordiner. He spoke about the pigmentation occurring in the skin in cases suffering from Graves' disease. I have been very much interested in that sign. Sometimes it seems to occur very early. I have always considered this a leucoderma, an absorption of pigmentation, and I question whether this was correct, and also whether anybody has done anything to relieve it?

DR. TENNYSON L. DEAVOR, Syracuse. I think the papers this afternoon have been highly instructive, almost ultrascientific. In fact so deep that it is quite difficult to discuss them. I, for my part, have not listened to anything better on the subject than we have heard to day.

I would like to say just one or two things, and will be brief. For instance, we all admit that the rest cure is essential, but I would raise the question as to whether we cannot continue it too long? So that while we may seem from appearances, to cure, or greatly relieve the thyroid symptoms yet all the while, the deceptive effects of hyperthyroidism are going on in distant organs, the heart, the liver, etc. I would say, then that the rest treatment, or any other, should not be carried too far, or beyond its true indication.

Suppose now, that we do accept Dr. Gordiner's percentage of cures which if I heard rightly is 50 per cent. Why not increase that percentage by adding surgery to the rest cure at the proper time? Of course the cases must be carefully selected.

First I have not found a single case of exophthalmic goitre in which I could get the splendid results from any of the other lines of treatment alone as when I have carried out extreme ablation. Whatever this may mean in metabolism I do not know but there must be some-

thing in the intestinal tract of these patients, which enhances the poison of the hypertoxic thyroid

Second, in removing a cystic goitre—which we have heard this afternoon is frequently the seat of further degeneration, especially in the case of adenomata, foetal or adult—in removing such cyst or adenoma, I believe that we should not stop there, because very often the patient may need to undergo a second operation to reduce the remaining thyroid tissue, which is often hypertrophied in excess. We leave, of course, the postero-external portion of the gland and capsule, near which are the recurrent laryngeal and the parathyroid bodies

Third, as to elimination, these patients, as we know (I am speaking of exophthalmic goitre all the while), have an excessive action of the sudoriferous glands, and must be encouraged to drink water. They should be compelled to take a great deal of fluid. I speak of it because, in many cases, the patient does not know she needs fluid, although water is simply leaking from the skin all the time

Then, the fourth is this, if we continue to accept every new means of therapy that comes up, as the last word in exophthalmics, we are going to run afield. The surgeon must not do this, the medical man must not. We must qualify the various lines of treatment. Every little while, some new drug is brought into practice, as having the ability to cure exophthalmic goitre, or some method of application, the X-ray, etc. They all have their place, undoubtedly. But if one operates on all these cases—I don't mean promiscuously—but if the surgeon loses that rare conception of things, which determines the nicety of balance between medical and surgical cases, he will operate too frequently. The medical man may go just as far the other way. I think we should unite our efforts very, very carefully

DR MARY DUNNING ROSE, New York City. Being specially interested in the diet side of this subject I should like to know why the author recommends fish, chicken, lamb, and discriminates against nice juicy beefsteak, which contains but 18.6% protein

DR GEORGE E. BEILBY, Albany. I believe that this symposium on goitre, where it is possible to discuss the medical and surgical aspects of the condition should prove of great value to patients suffering with hyperthyroidism. I think it is now a generally accepted fact that cases of simple or colloid hypertrophy and those of adenoma and cysts can only be successfully treated by surgical means. Here the symptoms produced are largely local or pressure symptoms and are readily relieved by removal of the enlarged gland or tumor

The disputed point seems to be in reference to these cases of hyperthyroidism. I would like to impress upon those present, particularly the internists, that results obtained by proper surgical treatment are far better than 50% of cures. If these cases can be reached by the surgeon before serious complications arise there is almost 100% of cures

This work by Dr. Goetsch which has been presented this afternoon should prove of particular value as a means of early diagnosis. I have recently found of great service, however, a routine examination of blood, particularly with reference to the relative number of lymphocytes. Attention was first called to this condition by Dr. Kocher and confirming his findings I have, in conjunction with one of our internists at the Albany Hospital, had accurate differential counts made and we have found without exception that all of these cases of hyperthyroidism have early and pronounced lymphocytosis. In many instances we found lymphocytes to comprise 40% of the white blood cells. It has been our experience that there is not an increase in the total number of leucocytes but only an increase in the lymphocytes mainly at the expense of the polynuclears

I believe that this condition of lymphocytosis is a valuable diagnostic sign in cases where the early diagnosis is in doubt. We have found it as pronounced in many of the mild and more or less atypical cases as in those presenting the more classical symptoms

I feel very strongly, and I think I voice the sentiment of every surgeon doing this line of work, that we should in all fairness get these cases before serious complications arise. Recently I had to operate on a case that had been treated medically for three years. I think you will agree with me that this is too long and I feel that medical men and surgeons should cooperate more closely in the treatment of these cases

## DRY MILK IN INFANT FEEDING

By ROGER H. DENNETT, B.S., M.D.,

NEW YORK CITY

**D**RY milk is by no means a new food for infants. It has been used abroad for many years and its place is well established in the literature. It is a powder made from fresh cow's milk by the evaporation of the water. The liquid milk is instantaneously dried as it flows over hot revolving cylinders and in its dried state contains all of the original elements except water. The powder is put up in cans and is readily prepared for feeding purposes by dissolving it in hot water

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 21, 1918

In 1912, Prof. Porcher of Lyons, published a book dealing with the methods of desiccation of milk, and showing the results he obtained upon a number of individual infants. He showed that dried milk gave very satisfactory results when employed as a food for infants.

Jacquet carried out observations on the metabolism of an infant of seven months who was fed on dry milk, with satisfactory results. The nitrogen content of the milk taken was estimated and also the nitrogen content of the feces. A high rate of absorption of nitrogen was found, amounting to over 90 per cent.

Bonnamour fed 56 infants over prolonged periods upon dried milk. He found that dry milk was extremely useful and especially valuable in cases of sickly infants who, while unable to digest milk in other forms, could yet take dried milk readily and make good progress. He states that he had only met five cases of intolerance to dried milk in the course of eight years' experience and expressed himself converted from a former stage of doubt as to the value of dried milk.

Pouliot states that dried milk is especially valuable for use in intestinal disturbances.

Nash says "I have followed up considerable number of infants fed on dried milk, and I am personally convinced that there is no more risk of rickets with this diet than with a good quality of raw cow's milk." He also states that it is possible to cure rickets by changing a previously given diet to a dried milk diet.

C. Killick Millard states "It was very soon discovered, however, that dried milk had one most important advantage—greater digestibility—and that many infants would return it and at once begin to thrive who previously had been continually subject to vomiting after each feeding and in consequence were making little or no progress. A careful watch has been kept for any bad effects such as scurvy or rickets but although I have had experience of some hundreds of infants fed on it for periods ranging up to ten months or even longer, so far none have been seen. Inquiries have also been made from fifteen medical men practising in the districts whence most of the cases have been drawn, and their replies in all cases were favorable to the use of dried milk and support the conclusions that no bad effects have followed."

Averiguet, Block-Michel and Dorlemont have used dry milk for cases of mixed feeding and for dyspeptic children and obtained very satisfactory results.

Dried milk has long been used in the so called proprietary foods, among them Nestle's Food, Allenbury's Food Mammala Malted Milk and so forth. The main fault that could be found

with these preparations is that most of them contain other ingredients beside cow's milk. Nestle's food, for instance, is stated upon the package to be "a compound of milk, baked wheat flour, wheat malt and sugar only." Allenbury's food is stated by the manufacturer to be made of milk, cream and milk sugar modified to "imitate the percentages of breast milk," evaporated in vacuo and sold in powder form. Mammala is stated by the manufacturers to contain 54% of milk sugar, and most of the malted milks contain a large percentage of maltose and dextrose beside the dry milk.

One can readily see the advantages of a dry milk which has nothing added to it, neither sugar nor starch, for many infants, especially the difficult feeding cases, have an intolerance for the various sugars or for starch, and dried milk which has no sugar or other ingredients added to it will be more easily digested and therefore superior to any of those preparations that are sold with the sugar or starch already mixed in it. On the other hand, the addition of these ingredients may be ordered if any of them are considered necessary for the individual infant at hand.

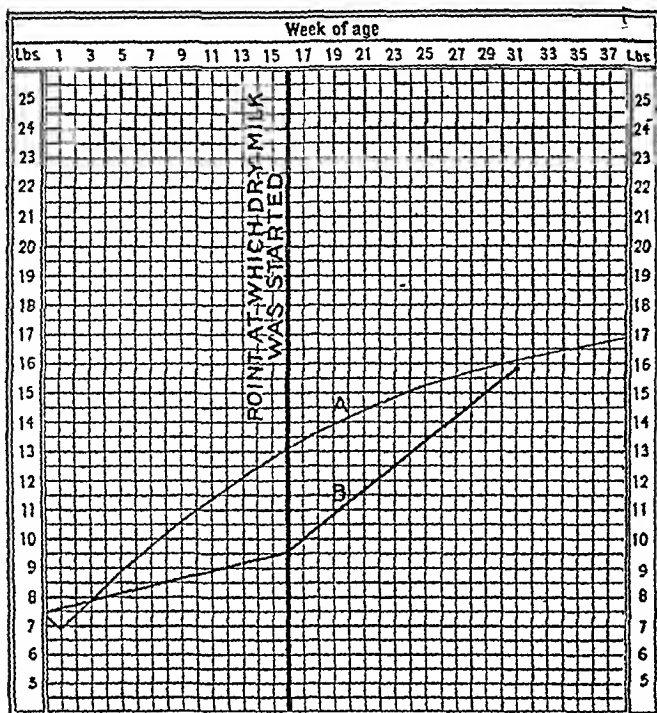
It has been my clinical observation that dried milk is better tolerated by those infants, who have already received a food injury (which means that it is more easily digested and assimilated) than raw milk or boiled milk mixtures. This observation is based upon the close study of over fifty cases in private practice which have been followed over a prolonged period with the utmost care during the past year. I have also used dried milk extensively in hospital cases, but I do not consider that feeding experiments conducted in the wards or upon dispensary patients are as valuable nor can correct deduction always be made. So strongly do I feel upon the superiority of dried milk over raw or boiled milk that I turn immediately to the use of dry milk as soon as I find that the individual infant does not prosper upon ordinary milk mixtures of fresh liquid milk, but with the change to dried milk the improvement is so marked and in many instances the relief from digestive symptoms is so immediate that in recent months I have turned to the dried milk without delay, thus saving time as well as the incident discomfort of the baby and the anxiety of the parent.

Without exception in all of my cases where there was no organic disturbance such as pyloric stenosis, tuberculosis, syphilis etc. the results have been surprisingly good.

Vomiting has often been controlled within twenty-four hours, intestinal indigestion immediately overcome and increase in weight begun at once.

In the composite weight chart "A" represents the weight curve of the normal infant (Holt) and "B" the average weight of my fifty cases.

When the dry milk was begun they averaged three and one-half pounds below the normal, whereas the average weight had reached the normal point when the food was discontinued or other foods begun



The following cases are typical ones taken at random from my series

Case 1 J B, was two months of age, weighing eight pounds, one ounce, the birth weight being eight pounds, six ounces. He was breast-fed the first two weeks of life and since then had Imperial Granum, Malt Soup and various modifications of cow's milk. For three or four weeks the stools had been loose, green, containing mucus and curds, five to eight a day. There has been more or less vomiting, since birth, even on breast milk. For the last two weeks the vomiting has been projectile in character, and at almost every feeding vomited often all he had taken. When first seen he was given one tablespoonful of dry milk in three ounces of water, fed every three hours, seven feedings in twenty-four hours. Vomiting stopped at once. In two days dry milk was increased to two tablespoonfuls in three ounces of water. There were three firm, smooth stools a day and no vomiting. Three days later the feeding was increased to three tablespoonfuls of dry milk and four ounces of water. There was no vomiting, the stools were normal and he had gained six ounces in weight. The vomiting never recurred nor was there any subsequent looseness of the bowels and he continued to gain progressively in weight.

Case 2 R B, born January 5th, 1917, birth weight being six pounds, three ounces on Oc-

tober 15th, at the age of nine months weighed eleven pounds, two ounces. Previous feeding breast-fed the first month, then malted milk mixtures, and for the last five months he has been very intelligently fed with fresh milk modifications with various sugars but without great success. There was vomiting at almost every feeding. The stools were firm, the appetite was good, but he was restless, fretful and slept but little and was pale, poorly nourished and rachitic. When first seen on October 15th, he was started on two tablespoonfuls of dried milk and six ounces of water, fed every three hours, six feedings. Every second day the dry milk was increased one tablespoonful up to five tablespoonfuls dry milk to six ounces water. The vomiting was much diminished from the start and after one week it practically ceased. There was a continuous gain in weight, and on January 16th, three months later, the baby weighed eighteen pounds, six ounces, a gain of over seven pounds in three months.

There are comparatively few facts to learn in using dried milk, in fact the simplicity of the whole procedure is one of its desirable features. If by any means we can make the subject of infant feeding less complex, less surrounded by intricate mathematical calculations a definite service will be rendered.

The food must be made fresh at each feeding by dissolving the proper quantity of the dry powder in the proper quantity of hot water. In order to furnish fifty calories per pound per day give three tablespoonfuls, levelled with a knife, of dry milk for every pound of the body weight, since a tablespoonful has sixteen calories. For example, a seven-pound infant needs fifty calories per pound per day, in twenty-four hours twenty-one tablespoonfuls. If this infant is given seven feedings a day (three hour intervals) each feeding would therefore contain three tablespoonfuls of dry milk.

As a matter of fact, only very poorly nourished infants need as many as fifty calories per pound of dry milk. Well nourished or fat babies gain progressively on forty calories per pound per day (or even less), which can be furnished in two and a half tablespoonfuls for each pound of the body weight.

The maximum strength of the food as I used it was one tablespoonful to the ounce of water, weaker solutions always being used at first.

When beginning dried milk with an infant that has already had marked digestive disturbances or a food injury, it is advisable to give much less than the infant actually needs and increase the tolerance just as you would with any other food, although it is noticeable that the tolerance is much more quickly increased for dried milk.

than it is for fresh cow's milk or sugar. I usually begin with one tablespoonful (one-eighth of an ounce by weight) in two to four ounces of water according to the age and size of the infant. In twenty-four hours two tablespoonfuls to each-feeding may be used and a dry or two later three tablespoonfuls, and so on until the caloric requirements are fulfilled. An infant of average size and weight may have at each feeding one or two more ounces of food than the number of months of its age with a minimum quantity of three ounces and a maximum of eight ounces. Undersized or vomiting infants must have less. This method of increasing the tolerance is well illustrated in the following case:

F W was a pale, emaciated infant of two months, weighing nine pounds four ounces, the birth weight being ten pounds. At three weeks of age vomiting had started, probably caused by sugar intolerance acquired through the feeding of Eagle Brand condensed milk. Later she was put upon a top milk formula with milk sugar and was still later given a whole milk mixture with Eskay's Food. But the vomiting increased in frequency and in quantity so that only a small portion of her food was retained. A skimmed milk mixture without sugar succeeded in controlling the vomiting, although there was a loss in weight on this low caloric feeding. When sugar was added in the form of Dextrinulose the vomiting recurred and was just as bad as ever. On December 23rd she was given one eighth ounce (one level tablespoonful) of dried milk to two ounces of water every three hours, seven feedings. The following day one quarter ounce (two level tablespoonfuls) dried milk to three ounces of water at each feeding and two days later three tablespoonfuls of dried milk to three ounces of water. On December 30th she weighed nine pounds fifteen ounces, a gain of eleven ounces in seven days. The stools were normal and she had not vomited more than two or three times throughout the week. The food was then increased to four tablespoonfuls of dried milk to four ounces of water, seven feedings, three hour intervals. She gained thirteen ounces the following week and continued to gain and prosper. On July 16th when nine months of age she weighed twenty-four pounds, having had no other food but the dried milk and orange juice throughout these seven months. Her color was good, the musculature was excellent and there were no evidences of rickets or other nutritional disturbances.

The question invariably arises with any particular kind of feeding: Does it cause rickets, malnutrition, anemia or scurvy when used over a long period of time? In fret suspicion always rests upon any food which does not contain fresh

cow's milk, or even milk which does not contain the same percentage of fat and protein as the breast milk. The fundamental cause of rickets and scurvy, not being known, clinical observations must be relied upon to determine whether a given food does cause these disorders. Close observations has shown definitely that neither low fats, the pasteurization or the boiling of milk directly causes scurvy or rickets when orange juice is given in the proper quantities, and the most careful watchfulness for such manifestations in the infants to whom I have given dried milk show also that the same is true of dried milk. In none of my cases has scurvy or rickets originated. On the other hand, many of them had rickets, malnutrition or anemia when the dried milk was instituted, and which, in the course of time and often with unusual promptness, disappeared. Hess has shown that it is wiser to give orange juice to all bottle-babies beginning as early as six weeks of age, and in this way the question of scurvy may be eliminated. Therefore all of my series fed with dried milk, have, as a routine, received orange juice by the time they have been on the dried milk for two or three weeks.

The very worse case that I have ever treated was that of B B, born June 28th, 1915, birth weight being seven pounds, eight ounces. The present weight at the age of two years and one month, was nine pounds two ounces. The previous feeding had been very intelligent bottle feedings of modified whole milk and skimmed milk mixtures throughout the first year and less intelligent persistence of these mixtures throughout the second year. The bowels were almost invariably loose and showed signs of intestinal disturbances when sugar was added to the feedings or any other article of diet instituted. She had had at least twenty or twenty-five attacks of diarrhea during the second year of her life. At the first visit there were three loose stools a day, no vomiting and the baby was ravenously hungry. She was emaciated to the last degree, extremely anemic and had sixteen teeth. Her abdomen was distended, the bony development showed marked rickets. The feedings which were advised were as follows:

Two tablespoonfuls of dried milk, one ounce barley jelly, four ounces of water, were given every three hours, six feedings in twenty-four hours. Every third day the dried milk was increased by one tablespoonful, up to five tablespoonfuls of dried milk to six ounces barley gruel. On August 6th, two weeks later the child weighed ten pounds, two ounces, had one hard stool a day, there was no vomiting, she slept well and was still hungry. The feeding was changed to six tablespoonfuls of dried milk

to six ounces barley gruel and orange juice was started. She was allowed zwieback with each feeding in gradually increased quantities. On August 13th, one week later, she weighed eleven pounds, two ounces, a gain of one pound in a week and the feeding was increased to seven tablespoonfuls of dried milk to seven ounces of barley gruel and zwieback given with every feeding. Six feedings in twenty-four hours. On October 14th, three months later, she had more than doubled her weight, weighing eighteen pounds, eight ounces, and was in a splendid physical condition. In the meantime, vegetables and cereals had been added to the dry milk diet, as her powers of digestion increased.

The theoretical reasons for the ready digestibility of dried milk deserve consideration. First, and perhaps most important, is the change which takes place in the casein during the process of drying. The heat and the loss of water separates almost instantaneously the casein into minute particles which remain suspended in this finely divided state when water is later added for feeding purposes. In the stomach these separate particles do not unite to form large masses or curds, such as are found when fresh cow's milk is acted upon by the gastric juice. Instead they become swollen in the stomach but remain separate particles which are not only more easily attacked by the gastric juice but when they pass into the alkaline medium of the intestines, where the greater part of the digestion takes place, these fine particles are digested much more readily than the large curds of fresh cow's milk, or even the smaller curds of boiled milk.

The preparation of dried milk which has been used for these experiments (Honor Brand), contains a low fat, that is, 12 per cent in the dried milk powder. This is probably one reason that infants who have had an injury or indigestion due to fat, take care of it more easily than they do the ordinary milk mixtures. Besides that, dried milk contains a larger proportion of free fatty acid than does fresh cow's milk. These fatty acids react with the alkaline carbonates to form soaps and the soaps in turn form an emulsion, which assists in the digestion of the fats.

Beside the question of the proteins and the fats, the sugar of dried milk presents a very interesting problem. When first using dried milk I was very much surprised to find that dried milk and water alone proved to be a well-balanced feeding. In other words, the babies gained and prospered without any additional sugar, starch or other carbohydrates. We know that fresh cow's milk alone, without the addition of carbohydrates, is not a well-balanced ration, at any age, and it is almost impossible to make an infant

gain continuously in weight without either the addition of sugar or starch. However, dry-milk alone mixed with water, one part to eight by weight (one level tablespoonful to one ounce of water), gives a mixture containing about five and one-half per cent lactose, one and one-half per cent fat and a little over four per cent protein. This high protein content has led me to add sugar or gruels or both to the feedings of older infants after the digestive disturbances have been controlled, but usually not until four or five ounces (30 to 40 tablespoonfuls) of the dry milk product are consumed daily. I have found that with the larger quantities of dry milk the urine is apt to become ammoniacal and that by increasing the calories with starch and sugar this excessive ammonia output in the urine can be avoided.

Leaving aside the question of digestibility of dried milk, there are many distinct advantages of milk sold in this form. The lessening of the bulk by the removal of water makes it easier and cheaper for transportation. When properly prepared it is sterile and is therefore not a source of disease. It will keep without even any changes in the butter fat for a period of at least a year, probably longer. (I have myself seen a package which has been kept a year without any deterioration.) After the can has once been opened it does not spoil and is not easily contaminated, as for instance is condensed milk.

The simplicity of its preparation for feeding purposes by simply adding the dried milk powder to hot water is a distinct advantage and therefore makes it available for the masses, and superior for the ignorant and uncleanly. And finally, where good milk is not available, as for instance in the smaller cities and towns where the gospel of certified milk has not penetrated, or in countries where climate or other conditions prevent proper dairying, or in times of war, it might be considered almost invaluable. I am informed that many tons are being sent to France monthly for use in infant feeding.

In conclusion let me say that dry milk is not a panacea, for there never will be such a thing as a panacea in infant feeding. It is only one more weapon with which to combat digestive disturbances, one more resource at hand to use with infants of feeble digestion and to tide over a critical period in selected cases.

#### BIBLIOGRAPHY

Porcher (1) "Le lait desséché," Lyons, 1912. (2) "Les qualités qui doit posséder un bon lait desséché au point de vue médical," *Arch de Med des Mal de la l'Enfance* 1913, xvi, 433.

Jacquet "Ueber Trockenmilch und ihre Verwendung als Nahrungsmittel," *Korrespondenzblatt f Schweizer Aerzte*, 1904, p 745.

Bonnamour (1) "Le lait desséché," *Bull de la Soc Med des Hôpitaux de Lyons*, 1913, xi, 95, and Lyons

*Med* 1913, cxx, 305 (2) 'Le lait desseeche dans l'alimentation du nourrisson bien portunt et du nourrisson malade,' *Arch de Med des Enfants* 1913 xvi, 321, 401

Pouhot "Le poudre de lait dans l'alimentation des nourrissons" *Journ de Med de Paris* 1914 xvi 149

Nash The Use of Dried Milk (a paper given at the English speaking Conference on Infant Mortality, held in London August 1913), *Pediatrics* 1914 xxvi, 247

C Killick Millard *British Medical Journal* January 29 1910

Avragnet, Block Michel and Dorlemcourt 'Le lait sec dans l'alimentation des nourrissons,' *Arch de Med des Enfants* 1912, xvi 641

### Discussion

DR. EDWARD J. WYNKOOP, Syracuse I appreciate very much indeed Dr Dennett's paper, and feel hardly qualified to discuss it

As you know, Syracuse is the home of one of these milk powders and I think most of us in children's work have used the dry powder to some extent I still feel that I prefer, whenever possible, to use fresh certified milk when I can get it There are however cases when it has seemed advisable to change to the milk powder, and I think the milk powder has unquestionably a good use

I have found some difficulty in the practical application of milk powder The babies have had some trouble in digesting the fat, and for that reason, in figuring out the percentages I have always had to use a lower fat percentage than would seem to be indicated by the directions in making the milk solution

I was very much pleased to hear this paper and to have this type of feeding brought to our attention I think it has its uses but I still feel we ought to do all in our power to stick to the use of the certified milk and have the baby realize its importance

DR TEN LICK ELMENDORF, New York This using of dry milk always seemed risky to me, yet as a rule, the manufacturers' formulae seem to work out all right I have used a good deal of dry milk with babies that had to be weaned, and I find that it is taken better than ordinary certified milk Perhaps the drying process changes the casein in the milk, but I have found this trouble—that in using the Honor Brand dry milk in anything like the proportion they recommend on the can—and lately they have full directions with the can, telling just what to do—there are big heavy stools, and I find if I use the Mammal in anything like the proportion they recommend on the can, I am apt to get a diarrhea Probably that diarrhea came from the sugar I have interviewed representa-

tives of the manufacturers and they tell me sugar must be added to preserve these foods and fat must be removed from them

The weights seem to mean a lot to the parents, if we can show a pretty steady gain, weights mean a lot to us, too

If you can get the parents to measure out the dry milk, you are apt to get more uniform feeding, from time to time, than when they give feedings from different sizes of spoons It always pays to see what kind of teaspoons and table spoons the parents are using

DR CARL G. LEO WOLF, Buffalo Those directions on the cans and in the packages often make it simply impossible to use the best of material I have had this matter up with one company and they have mended their ways Lately I have written to another company, who have started in giving the most awful directions on their cans If the powdered milk people make this mistake too, then we ought to tell them where to leave off and I think this section should serve notice on the manufacturers of these dry milk foods that they will either have to leave their dilution to the pediatricists altogether, or we will have to leave their products to them

DR HERMANN N. APPEL, New York I owe the doctor some appreciation for the fact that he has taught me the use of dry milk in my private practice I have used it in my own family and particularly in the instance of a child that was to be operated on for pylorospasm, which the doctor helped me feed

The feeding is very simple indeed, and for that reason alone it ought to be recommended to the general practitioner even more so than to the pediatrician As Dr Dennett has so ably said it is a great aid to the ignorant mother The milk comes in sealed cans in one pound and three-pound sizes, and I might say again, that particularly during the hot weather, it can be very readily used even if not kept on ice and it is a great advantage to the mothers when they have to leave the city and go to places where perhaps ice is hard to obtain or where clean milk is not available

DR THEODORE H. ALLEN, New York I want to give voice here to my appreciation to Dr Dennett for teaching me the use of boiled milk Since I have been using it in private practice I don't have any more difficult infant feeding cases I came here particularly to hear this paper I don't see why we feel that cow's milk is so essential for feeding infants Mothers' milk is essential, we don't feed calves on

mothers' milk when the calves can't take cow's milk, and I don't see why we can't keep on trying to find a better substitute for fresh cow's milk

DR HERMANN N APPEL I should like to add one more word that may be of practical importance After these children have been on dry milk for some time it is with the greatest ease than one can substitute any milk formula for feeding that the average mother can easily make

DR J ROBERTS JOHNSON, Syracuse We have been led to believe that the enzymes are important factors in the use of raw milk I would like to ask Dr Dennett what becomes of them in the use of dry milk

DR ROGER H DENNETT In the first place dry milk is not a panacea Whoever finds a panacea in infant feeding will please telegraph me immediately at my expense Dry milk is just another step forward in infant feeding I am perhaps an extremist in the boiling of milk, because I feel the change in the proteid by boiling, probably due to the action of salts, makes the curds finer Dry milk is even more digestible than boiled milk

Honor Brand Dry Milk is probably not the only brand that is going to be used It is going to have a large field of usefulness and I prophesy that Borden, Sheffield and other large milk concerns will eventually put out a dry milk the same as they are now putting out pasteurized milk, certified milk and condensed milk

So far as I know, Honor Brand is the only preparation that has nothing else added to it The fats are low because part of the cream is removed before it is dried It was found that it would not keep with the high fat content and that less digestive disturbances arise when some of the fat is removed

Now, with reference to the enzymes I am very much interested just now in the salts of milk and the salts of other things, for instance, the salts of Dr Scott's fruit juices I am not so sure but that it is the salts in orange juice (it may surprise you to hear it) that prevents scurvy I am doing some work along that line We don't know very much about the real effect of enzymes In the boiling of milk and the drying of milk many of the salts are rendered inert, so that they pass through the gastro-intestinal canal without any absorption whatever

I have had brilliant results in certain cases but I don't suppose I am going to use dry milk and nothing else but dry milk I feel that in many cases I could not have gotten the infant started as quickly and that in others they never would have done as well on the ordinary fresh milk mixtures as they did on the dry milk

## SOME PROBLEMS IN VISUAL ECONOMICS AS APPLIED TO THE NEW YORK STATE WORKMEN'S COMPENSATION LAW.

By ALBERT C SNELL, M.D.,

ROCHESTER, N. Y.

**A**UTHORITIES are nearly agreed that a comprehensive and scientific method for the determination of the measurement of the loss of any individual's earning ability, depends on three cardinal factors—his functional ability, his technical ability, and his competing ability From these premises more or less complicated formulæ have been worked out from which one may determine accurately the total economic loss to any individual who has had a personal injury In adapting these accepted principles of visual economics in the execution of the New York State Workmen's Compensation Law, unusual conditions are presented and new problems, because the law definitely fixes the rate of compensation for injuries to various specifically named parts, according to schedules contained in the law, and because it also establishes the individual's earning ability or wages by the principles laid down in the law Therefore, for the purpose of "assessing damages," the established formulæ which consider the entire relationship of an injured part to all others, and which include the consideration of the three cardinal principles mentioned above, are impracticable and inapplicable Hence the physician in determining the economic loss from personal injury is concerned solely with a consideration of the loss of function to the injured part or parts

As ophthalmologist then, our problem is solely the consideration of the loss of visual function resulting from ocular injury, which loss we are asked to express in terms of percentage In the language of the statute, "For the partial loss of the use of an eye compensation therefore may be awarded for the proportionate loss of the use of such eye" (L 1917, Ch 705) This problem would seem to be very simple, but in actual practice there is much confusion and disagreement In making reports of the percentage loss of vision no two ophthalmologists examining the same case, or even when following the same data, give exactly like percentages of loss I shall attempt to point out some of the basic reasons for this confusion and disagreement

Let us first consider the data as requested by the State Industrial Commission in form CR-69. The three questions which have reference to visual function are 9, 10, and 13 Question 9 asks for "vision uncorrected" and "vision after correction" (These answers presumably are to be expressed in terms of some recognized scientific standard, such as the Snellen foot of 20/20.

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 22, 1918

or the metric of 6/6, etc.) Question 10 asks, "Was perimetric or any other special test or examination necessary? If so give results of same." Question 13 asks, "Give a summary of the case as you see it, peculiar conditions, etc."

In question 9 'vision' asked for *evidently* refers to acuity of central vision, but it does not specifically do so. To be exact the question is, 'What is the vision?' Does this mean the entire vision? Does it mean that the answer should include and express all the essential elements of sight? If so, some information should be given as to ways and methods of expressing the answer. The ophthalmologist surely would consider this question as applying to central visual acuity only. He understands that the usual method of answering this question—of expressing the visual acuity by a fraction—does not answer for entire vision. But do the other interested parties—the employer, insurance carrier, commission, and court—for whom the questionnaire is primarily intended understand that when we express 'vision,' without any qualification whatsoever, and express it in the form of mathematical exactness, we don't mean "vision" but only one out of a great many important parts of this complex act? In fact, all answers that are usually made to question 9, have elements of untruth in them and are deceptive in that they do not properly answer the question "What is the vision?" This question can be answered only when all the questions relating to vision as a whole are answered when all the elements of vision are properly tested, examined and considered, and when these results give to each of the important factors of vision their proper and proportionate degree of usefulness. To ask for "vision" and then proceed to an investigation of the essential parts of vision is to place the cart before the horse, to say the least and is a very unscientific and undignified method of procedure.

Question 10 asks "Was perimetric or any other special test or examination necessary? If so, give results of same." This question is indefinite, evasive, confusing and incomprehensible. The perimetric test of course refers to the scientific test for field vision. But to what does "any other special test" refer? Surely this does not refer to the field. Therefore it probably has reference to tests for other functional disturbances. After several years' study of this question I don't yet know what it actually means. I will express the opinion however that it is all-inclusive and may mean anything that one wishes it to mean. Freely and inferentially we interpret it as referring to tests for external or internal ocular muscles, binocular vision or to any test or examination concerning any ocular functions which the case may demand or which the fancy of the examining physician may suggest. Hence by inference and by reading freely between the

lines, all the elements of vision might be considered properly in this question. The condition of the field of vision should be stated in every case of loss of vision, since the field is one of the indispensable parts of sight.

Question 13 reads, "Give a summary of the case as you see it, peculiar condition, etc." In the questionnaire there is no question which asks for the amount of vision considering all the essential factors of vision. However, one might include in his answer to this question what he regards as the total amount of vision. For the question is big enough and broad enough to include a statement in regard to anything whatsoever that the oculist may wish to put into it. Question 13 should be revised by adding, in place of the present meaningless etc., the following as a second part of the question "the percentage of useful vision." The question is revised should read, "Give a summary of the case, (a) peculiar condition, (b) the percentage of useful vision." The percentage of useful vision remaining would then express a very definite and concrete summary of such facts as might be brought out in all of the preceding questions. Also, the loss of vision expressed in percentage would follow the dictum of the courts where now many decisions have been based on the "percentage of loss of vision" and where damages have been assessed on 'percentage of loss of vision'.

A consideration of the function of binocular vision has been entirely omitted both in the questionnaire and in the language of the law. The statute speaks of the 'loss of the use of an eye' and of the 'loss of both eyes,' and of the "proportionate loss of use of an eye", but the fact that one may have perfect vision in each eye—may have the perfect use of each eye separately—and yet have his vision profoundly disturbed, is not expressly considered. Broadly considered, the partial loss of use of an eye does include its usefulness in co operation with its fellow yet form CR-69 does not provide a question to cover this important visual function and entirely ignores the fact and importance of co ordinate action or binocular vision unless we are inferentially to include this also in the all embracing question 13 especially in its "etc." Almost every ocular injury to some extent interferes with the binocular function. Although incidentally any disturbance of binocular function is indirectly involved in a study and measure of the central visual acuity of the field, and of the muscle function there are many cases in which binocular vision is not brought into consideration at all. In this class of cases are the traumatic cataracts where vision is partially or completely up to standard. And even in that class in which there is an automatic consideration of the binocular function, such loose methods of determining the loss of this function are merely incidental and

unscientific Therefore, awards for compensation in this class of cases are very often unjust and unfair, both to the injured employee and to the insurance carrier In this class of injuries I find a very wide range of professional opinion as to the percentage of lost sight, a great difference in the amount of compensation awarded by different members of the commission for identical degrees of visual loss, and, so far as my investigation has gone, there is no judicial opinion on the subject Our questionnaire should contain some questions which should show to what extent any injury has influenced or disturbed the binocular function or stereoscopic vision and what relation this disturbance has to vision considered in its entirety

To the expert these three questions as at present constructed and their answers as they are usually given often do convey a real clinical picture of the case, but not always That depends largely on his powers of imagination and of correct inference It must not be forgotten that the questionnaire is not intended solely as a clinical record of the case for the guidance and instruction of the ophthalmic surgeon, but that its primary object is to convey and to portray the degree or amount of loss of the use of an eye to those parties who are responsible for the carrying out of the provisions of the compensation law It is to the employer, to the insurance carrier, and to the commission, that a definite idea of the amount of visual damage should be made clear, definite, and comprehensible by the questionnaire For this purpose the present questionnaire is useless, and sometimes worse than useless, as it conveys untruths or at best, half-truths, and it is not possible of comprehension by the non-expert, non-ophthalmically trained mind Even as an instrument for the portrayal of the essential facts of vision to the specially trained, it is deficient inadequate, and unscientific The questionnaire should contain questions which at least regard the indispensable elements of the functions of vision It should consider all the essentially useful elements of sight, and it should record these results both in a scientific manner, and also in such a way that the essential facts may be capable of understanding by all interested parties This is not an impossible proposition Although "vision" is a complex act requiring the co-ordination of many parts included within the visual organ, the optic tracts and the central nervous system, all authorities agree that, functionally, vision may be divided into three indispensable parts the central vision the peripheral vision or field of vision, and the muscular sense An injury to any part of the mechanism concerned with sight must always effect at least one or more of these essential elements of the function of vision And, although any one of these three elements may be individually damaged or disturbed, there is a

co-ordinate relationship between these distinct functions of each eye and also between both eyes acting together

From the accepted standards and from the authorities on visual economics we should be able to discover principles which should be easily adapted to our peculiar problems in determining the percentage loss of vision resulting from personal injury However, a study of the subject shows many fundamental differences among these authorities which are of primal importance and which would greatly alter the determination of the estimation of the amount of vision lost in a given and identical case There are in use at the present time at least four accepted methods for estimating visual economic damage, that of Magnus and Wurdemann, that of Erastus E Holt, the Chicago Method, and the Casuistical Method A consideration both of the relative and of the independent values of each of these indispensable elements of vision, central visual acuity, peripheral vision and the muscle functions as they are regarded by these accepted authorities, shows that each element is held to have a very different value Thus Magnus and Wurdemann, considering these three essential elements of vision, regard each in the relationship of the factors of a product They say, "for, in the following of an occupation, not a single one of these factors could be left out Devoid of any single one of them, the possessor of the damaged eyes would have an earning power of practically nothing whatever The elements, therefore, should be regarded as factors, not as the elements of a sum, in other words as  $O \times IX 1$ , and not as  $O + 1 + 1$ " (Wood, "Sys Oph Operations," p 115) Therefore, with a total loss of any one element there is a total loss of functional ability By the same authorities the relative value of central vision, peripheral vision, and muscles is placed as  $C\sqrt{p} \sqrt{m}$

Holt ("Economics of the Eye, etc," *Trans Am Academy of Ophth & Oto-Lary*, 1914), however, does not regard the total loss of one of these three indispensables as a total loss of function, but he says, "In case of the loss of two or all three of the functions of one eye to 01 or less of normal, the loss to the functional ability of the eye for economic purposes is total—" And further, he states, "In case of the loss of the central acuity of sight to 01 or less of normal, there is a loss of one-half of the functional ability of the eye—" Note the great difference between these authorities With the loss of central vision, Wurdemann & Magnus regard the loss of visual function as total, while Holt regards it as 50 per cent Again, Holt states, "In case of the loss in the field of vision of one eye to within  $5^\circ$  of the point of fixation the central acuity of sight and the muscular functions of the eye being normal there is a loss of one-half of the functional ability of the eye" Thus, ac-

ording to Holt, a complete loss of the field of vision is regarded as a loss of 50 per cent of the function of vision. Whereas, according to the method of Wurdemann such a loss of the peripheral field is regarded as a total loss of visual function.

In the Chicago method, stress seems to be laid on the importance of disturbance to the binocular function, although visual acuity is properly regarded as the dominating factor. By this method injured employees are placed in two classes. Class A includes those whose employment requires ability to judge depth at arm's length, Class B those whose employment does not require the accurate judgment of distance. This system also places an economic value on the cosmetic damage which other systems practically disregard. Here perfect vision in each eye is placed at 100 points for each eye, stereoscopic vision (binocular function) at 100 points, and cosmetic effect at 50 points, so that the relative value of the binocular function is 30 (30%) per cent of that of the entire visual function for Class A. The factor of 100 points for depth perception applies only to Class A. The cosmetic element has a value of 15 (15%) per cent of that of perfect vision and is applicable to both classes.

The fourth method is a casuistical method and the one employed by the Imperial Insurance Office. After establishing the standard of  $33\frac{1}{3}\%$  as indemnity for the total loss of one eye for a "qualified" workman and of 25% for the "unqualified" (by qualified workman is meant one whose occupation requires good judgment of distance and of depth-stereoscopic vision) the percentage of loss of vision is based on the concept of the "working vision." An indemnity in this method supposedly indemnifies an injured workman for the entire loss of earning ability resulting from ocular injury.

By this method ("Text Book of Ophthalmology" Roemer-Foster p. 397) "An indemnity of 10% is awarded for a reduction of the vision to between  $\frac{1}{3}$  and  $\frac{1}{6}$  in qualified workmen, to between  $\frac{1}{4}$  and  $\frac{1}{10}$  in unqualified," and this indemnity may be discontinued or modified after one year if there has been improvement and if it has been demonstrated that there is no loss of earning power. "If the vision of the injured eye is less than  $\frac{1}{10}$  the indemnity may be raised to 15 or 20% because the condition now approximates that of blindness and only the binocular field is of use." By changing the percentages to represent the total loss of one eye to a 100% basis in place of the  $33\frac{1}{3}\%$  as above according to this method we would find that for the best central vision of 20/60 to 20/120 field of vision remaining in use an award of 30% would be made. And when central vision is reduced to less than 20/200 (field remaining normal) an award of 45 to 60% would be made. Therefore by this method although central vision may be totally

lost economically, the award would be 50% of that for the total loss of sight, provided that the field of vision were normal. In other words the complete loss of one of the three indispensable factors of sight is not regarded as a total economic loss of sight as it would be by the Magnus-Wurdemann formula but the loss of central vision is regarded as the loss of one-half of useful vision.

By this same method for an aphakic eye in which good vision may be obtained with a contact glass an award of approximately 50% is made.

In considering the question of loss of useful vision as applied to our Compensation Law I find that there are at least five important problems presented to the ophthalmologist. The relative value of the three indispensable factors of vision, and the method of calculating the percentage of loss of vision resulting from an injury to one or more of these factors, is the fundamental basis of the whole question.

The first problem is the percentage value of a good field. This I have already discussed to some extent as it is the rock on which much professional opinion is smashed. I am of the opinion that in determining the amount of useful vision no essential part of vision which is useful should be entirely disregarded. Thus the value of the field must be recorded as part of useful vision. The field is commonly divided into three zones of 30° each and each is regarded as having equal value. The first zone extends from 5° to 30°, the second from 30° to 60°, and the third from 60° to the peripheral limit. From this it is not difficult to figure a percentage loss of field vision. A loss of the field from 5° to 30° or its equivalent is  $33\frac{1}{3}\%$  of the field, a loss from 5° to 60° is  $66\frac{2}{3}\%$  etc. For a practical method of calculation take the number representing the degrees of the visual field lost plus 10% of that number and this will represent the percentage of field lost. Example: Concentric contraction to 20° = 22% lost, to 30° = 33% peripheral contraction from outer limit to 60°, that is 30° of contraction of field. By my method of calculation  $30^\circ + 10\%$  of 30 = 33% loss of field. The weight of authority would regard a normal field of an eye as 50% of the entire functional value of vision.

The second problem is the percentage of useful vision in an aphakic eye. In these cases we have not only the problem of the amount of present useful vision but also the problem of the potential vision. All agree that with one eye practically normal central vision in the other—an aphakic eye—even when a contact glass renders it perfect is of no practical immediate use. But there remains even without a glass a useful field and in addition there remains the possibility of useful central vision should the other eye become lost. Possibly some special

rule to establish the percentage of loss of useful vision in this class of cases is necessary. However, I am inclined to the belief that should a proper consideration be made of the loss of binocular function the problem would be simplified. This brings us to our next problem.

The third problem is the value of binocular vision and the consideration it should have in estimating the percentage of lost function. It is generally conceded that stereoscopic vision which enables one to judge more accurately size, form and distance, is of real value especially to the skilled workman. This element of the visual function is entirely ignored by many ophthalmologists in considering the "loss of use of an eye." A broad interpretation of our statute would require that this part of useful vision be properly considered.

The fourth problem is the question of the economic value of the cosmetic effect which has been answered very differently by various authors. That a disfigurement of the eye or lids often seriously interferes with an employee's earning ability cannot be gainsaid, but a proper consideration of the disturbance of the three indispensable ocular functions would invariably include the cosmetic damage.

The fifth problem concerns the different values placed on the partial loss of useful vision depending on whether a scientific standard or an economic one is used. Most authorities on visual economics have established standards which represent the economic loss of vision and these economic standards of measurement essentially differ in many instances from the scientific standard. This difference between the economic standard and the scientific is a source of much confusion, apparent difference of professional opinion, and inconsistency. For example here is a very ordinary case. Best central vision is found to be 20/30, field and muscles normal. One opinion, following the "scientific standard" and disregarding the value of the perfect field, states that the loss of use is  $33\frac{1}{3}$  per cent. Another opinion following the economic standard states that a man with 20/30 central vision has lost no useful vision, his earning ability has not been decreased. Therefore, the loss of use of such an eye is nothing. Another opinion regarding all the factors of vision and, unconsciously perhaps, putting in an element of his personal equation, states that the loss of useful vision is 10 to 15 per cent. Thus we have in this, a very simple and ordinary case, a difference of measurement of  $33\frac{1}{3}$  per cent as regards the loss of vision, due to the fact that different methods, all authoritative were used in making a mathematical determination of the loss of vision. In this branch of medical science supposedly the most exact, these exhibitions of the lack of scientific accuracy and of professional agreement are a travesty on the ophthalmologists of our state.

The weight of authoritative evidence holds that when any two out of the three indispensable functions are lost there is a total loss of useful vision. The same weight of evidence holds that for trifling loss of visual acuity approximately to 20/30 there is no economic loss, also, that when the loss of visual acuity reaches 1/10 there is a total loss of useful central vision. On this latter point our courts have rendered a decision which holds that the loss of more than 80 per cent of the use of an eye constitutes total loss of use. At least the decision says "Loss of not more than 80 per cent of the vision of an eye does not constitute loss of use of the eye" *Boscarino v Carfagno & Dragonette*, 175 App Div 286, 220 N Y 323, other cases involving loss of percentages of vision are *Archangelo v Gallo & Lagudora*, remanded by the Appellate Division, March 7, 1917, *Blaes v Bliss Co*, S D R, Vol 9, p 288, affirmed by the Appellate Division, March 7, 1917, and *Flori v Stewart & Co*, S D R, Vol 8, p 503.

Note the language of the court, "Loss of not more than 80 per cent of the vision of an eye—" Exactly what does that mean to the professional mind? Does it mean that when central vision has been reduced to 20/100 there is the loss of 80 per cent of vision in that eye, assuming of course that peripheral vision and muscular function are undisturbed? Or does the percentage regard vision as a whole? This is an illustration of the difficulty of understanding the exact meaning of the court. The crux of the question lies in the interpretation, that is, in the analysis of what part or parts of the various essential elements of vision were considered in determining that 20 per cent of useful vision. From a personal experience I will give a specific example of a difference of opinion due to a different consideration of the relative value of the field of vision. An employee received a blow on one eye causing a hemorrhage in the macula which resulted in total loss of central vision, field of vision was reduced approximately 10 per cent centrally, muscle function was normal. At a hearing before a commissioner I testified that there was a functional loss of use for that eye of 60 per cent and an economic loss, considering the loss to stereoscopic vision, of 75 per cent. Another ophthalmologist testified that there was a total loss of useful vision. Which was correct? There was no controversy over the facts in the case. Should, or should not the field have been considered?

There is a prevailing feeling amounting to a firm conviction on the part of employers, insurance carriers, and commissioners that the medical profession is hopelessly divided on all opinions relating to eye accidents. For such a position there seems to be ample ground. I believe that the ophthalmologists of this state are largely to blame for this condition of opinion. It seems

to me that this is the proper organization to take up this matter for the purpose of correcting our apparent discrepancies.

I have attempted briefly to point out the lack of scientific questions in the present form CR-69 of the Industrial Commission. The very first essential is a proper record of the scientific facts concerning vision so that from this there may be accurately and scientifically figured the exact loss of the use of any injured eye. Form CR-69 should be revised so that more definite information regarding all the essential elements of vision may be recorded. There should be separate questions asking for central vision, peripheral vision, muscle function, and binocular or stereoscopic vision. There should be a question asking for the result of the ophthalmoscopic examination. Answers to the questions in regard to visual acuity and field should be expressed in decimal fractions. Any disturbance to muscle function should be shown and it should be further shown in what way this disturbance influences central vision and peripheral vision as to their usefulness. Where there is a disturbance of binocular vision it should be shown how this affects the usefulness of sight. There should be a question asking for the total amount of vision based on the scientific standards of measurement and the answer should be expressed in terms of percentage. Another question should ask, "Does this scientific measure of visual loss represent a greater or less amount than the economic standard?" or this question might be asked, "Does this scientific measure of lost vision represent a greater or a less amount than the actual loss of use of the eyes?" It is not my purpose in this paper to suggest the exact form for revision of the questionnaire but to illustrate many of the omissions of the present one and to show the lack of orderly arrangement of facts.

A questionnaire drawn up which would comply with the accepted scientific standards, showing the result of the examination of all the indispensable elements of sight necessary to useful vision, would consider separately the central visual acuity, the field of vision or peripheral sight, and all the muscle functions concerned with vision of each eye. And besides it would show the relation of one eye to the other, or their use together, which is the binocular or stereoscopic vision. Therefore, the questionnaire should contain separate questions which should directly refer to each of these three indispensable parts or functions of vision which when answered, should accurately and scientifically portray the exact state or degree of usefulness of each of these separate functions and their co-ordinate relationship. These questions might be arranged thus:

What is the central visual acuity? Right eye left eye—uncorrected—corrected expressed in a decimal

What is the field of vision for each eye? Expressed in a decimal

What is the condition of the visual muscles? Extra ocular, intra ocular. (Under ciliary muscles would naturally come the consideration of accommodation, under iris the question of light adaptation, under recti and oblique muscles the question of convergence, paralysis and paresis of the various ocular muscles.)

How does this interfere with the use of one or both eyes?

How is the binocular or stereoscopic vision disturbed? And how does this interfere with the use of the eye?

Give a summary of the case, (a) diagnosis, (b) ophthalmoscopic examination, (c) percentage of useful vision, (d) prognosis.

How does your estimation of useful vision differ from the scientific measure of vision?

I have attempted to show some of the different accepted methods of determining the economic visual loss, how these differ, and in what way they are applicable in the determination of "loss of use of an eye" under our statute. I have attempted to show some of the problems as they are presented in actual practice without attempting to offer a solution for them. I have done this because I believe that it is not best for the individual to take up these matters, but that our State Medical Society should inaugurate a movement with the object in view of placing this entire matter of visual economics on a scientific basis applicable to our Compensation Law, so that there may be some degree of uniformity of professional opinion, so that there may be the weight of authoritative opinion in any recommendations which may be made and so that justice may be done to all concerned in the operation of the law.

### Discussion

DR THOMAS H. FARRELL, Utica. Anyone who has to do with this kind of work before the Compensation Commission must be interested in the paper presented by Dr. Snell. I can confirm his statement that practically the only question which the insurance people present to you is what is the percentage of vision that this man now has? If you are willing to say 25 per cent 33 per cent they won't ask you anything else they will go along, and that is all there is to it.

However the problem is extremely complex and can't be so easily settled. It seems to me that there are at least four factors to be considered in the first place the cosmetic result, next the acuity of vision next the field of vision, and last the muscular condition resulting in binocular single vision or not.

Up to perhaps a year ago it was the practice of the Commissioner in our district to regard an

eye as entirely lost if the vision was not over 20/70. Now it was most discouraging after you had worked a month or two months on a serious injury like traumatic cataracts, and the complications that go with it, and gotten a good, presentable eye, in a safe condition with perhaps 20/70 vision, to have the Commissioner decide that that eye was lost, and it would be discouraging to the insurance commissioner as well, and to the insurance people. Then it would seem that another factor to be considered would be the economic. For instance, a vision of 20/70 to one man might be very satisfactory, whereas to another man it might mean putting him entirely out of business, that is, the business by which he had earned his living.

For example, a man who is digging ditches or driving a team could get along very comfortably with 20/70 acuity of vision and a good field, whereas it would be impossible for a man doing fine mechanical work to carry along his line of work with that vision.

Then, too, apparently no attention is paid to the condition of the other eye. Obviously the loss of vision in one eye, with the other eye perfect, is not nearly so serious a matter as a loss of the vision in one eye with the other eye imperfect.

If Dr. Snell has a method by which all these elements can be taken account of, and a fair conclusion arrived at, I hope he may be given time in his closing discussion to present that part of his paper.

DR JOHN J. O'BRIEN: The paper of Dr. Snell is certainly very interesting from many viewpoints, but I think as far as the compensation goes, that that is not the question for us to take into consideration. Our work is to get the eye or eyes as well as possible and then to present the facts, utterly unbiased by what the judgment of the proper authorities is going to be as to what the compensation should be. That is purely a legal question with which we have nothing to do, and if we were to take it into consideration it would probably sway our judgment one way or the other, depending on whether we were acting for the employer or employee, and we might do that very unconsciously.

So I think we have nothing to do with the question of compensation. That is the function of the court. Our work is simply to present the facts as they appear in the particular case, that is, what the damage to the eye is, what the acuity of vision in the eye is, and what the loss is to this particular man, taking into consideration what his occupation is, whether he is a high-class mechanic or a day laborer. Our function is simply to get the eyes in the best possible shape and then state the facts as to what the condition of the eyes are, and leave it for the court to determine what the compensation should be.

## REPORT OF THE UROLOGIC SERVICE AT THE BUFFALO GENERAL HOSPITAL

By FREDERICK J. PARMENTER, M.D., F.A.C.S.,  
BUFFALO, N. Y.

and

O. J. OBERKIRCHER, M.D.,  
BUFFALO, N. Y.

THE object of this communication is to briefly review the cases operated upon or treated, in the urologic clinic recently established in the Buffalo General Hospital, from March, 1916, to March, 1917.

The development of the clinic was made possible through the generosity of one of Buffalo's public spirited citizens, and is thoroughly equipped with all necessary instruments needed in the diagnosis and treatment of urologic diseases. It has been the aim of the clinic to have complete records of its own, which include a careful history, thorough physical examination, paying special attention to focal infections, operation or treatment and end result. All tissues removed are subjected to microscopical examination, and are then preserved, together with a mounted section.

Patients are encouraged to return for observation and re-examination from time to time and their condition entered upon the records. In this way the final result of the operation or treatment can be definitely ascertained.

The close proximity of the X-ray department and their cordial co-operation, as well as the Pardee Laboratory, affords every facility for scientific study, and deep appreciation to those in each of these departments for their help is acknowledged, especially Drs. Koenig and Hausten.

In reviewing this series of cases, some points of importance which have been impressed upon us during this investigation are worthy of mention. In determining whether a patient is a good surgical risk we consider the patient's appearance, general physical condition revealed by a thorough examination, analysis of a twenty-four hours' sample, special tests such as the examination of urine and blood for uric acid, urea and creatinine, and, finally, the dye tests, especially the phenolsulphonephthalein.

We do not base our decision upon any one symptom or test, but rely upon the clinical data as a whole, realizing that it is impossible to determine exactly the factor of safety or the degree of resistance of the patient by any means at our command. However, the scheme above outlined has been quite accurate, as our mortality statistics show. In unfavorable cases careful preliminary treatment is of the greatest importance and cannot be emphasized too strongly. Finally, we believe that the post-operative treatment is as important as the operation itself, and several

cases in this series would have been lost had they not received a great deal of our personal attention.

The greatest danger in older people who constitute a large number of urologic cases—barring shock, hemorrhage and infection which apply to all operations,—seems to be acidosis, which is evidenced by a dry tongue, nausea and vomiting and moderate abdominal distention. To obviate this condition we rely upon careful preliminary treatment, nitrous oxide anesthesia the giving of large quantities of fluid both before and after the operation, salt solution, subcutaneously, being frequently resorted to as well as alkalis and sugars. We aim to keep the tongue moist and force fluids regardless of amounts until this is accomplished.

In the kidney series it was interesting to note that pain is due to distention of the kidney by obstruction to the urinary flow, no matter what the etiology of the obstruction may be. Therefore when drainage through the urinary tract is good, pain and local tenderness are frequently absent, even when the kidney is extremely diseased. This was well illustrated in several cases of chronic pus and tubercular kidneys. Bladder symptoms on the other hand, as would be expected, were marked.

Estimating the kidney function with the catheters in the ureters, the following must be considered. First reflex inhibition of the healthy kidney due to disease of the other. Example. In one case of acute pyelonephritis the pyelium output from the healthy side was 5 per cent in 15 minutes and nil from the diseased side. Twenty-four hours after nephrectomy it had risen to a little over 10 per cent, and in two weeks was slightly over 40 per cent. In another case of stone specific gravity from the sound side was 1002, from the diseased 1008. Twenty-four hours after nephrectomy specific gravity had risen to 1025.

Second. Inhibition due to the presence of the catheter. This can be determined by repeating the examination a day or two later without ureteral catheterization and observing the ureteral orifice, using indigo carmine as a dye test.

Third. Leakage of the urine containing the dye, around the catheter itself. This can be estimated by examination of the bladder fluid. Pyelograms have been obtained by the use of 10 per cent and 15 per cent thorium solution introduced by the gravity method and in a fairly large number of cases we have never seen any ill effects or dangerous symptoms. X-ray plates are always taken before the thorium is introduced. If this had not been done in one case at least a stone would have been obscured and probably missed.

Regarding bladder lesions, aside from stone tumor or diverticulum, we are convinced that the bladder bears the same relationship to the

urinary tract as the stomach does to the alimentary tract. In other words, lesions of the kidney, prostate and vesicles nearly always manifest themselves by bladder symptoms, i. e., frequency, etc. We, therefore, always seek the etiology of an acute or chronic cystitis and remove it if possible and, at the same time, treat the bladder locally if necessary. This is not the rule when the case is treated by the average medical man as our records will testify.

Chronic purulent discharge from the urethra, in the absence of stricture, even if pus and shreds are in the first glass only, is, in over 90 per cent of cases, due to chronic vesiculitis and prostatitis. We believe that chronic urethritis, *per se*, is rare. This point also seems to be but little understood and appreciated by many.

In trigonitis, which is a common lesion in the female, we have always found a chronic urethritis as well. Many in treating this condition overlook and fail to treat the urethra. This is important, as recurrence is common unless the urethra is cured of this infection.

Stricture of the urethra is exceedingly common especially of the large caliber variety, though it is surprising to see the degree of obstruction which a stricture may cause without exciting marked symptoms. Difficulty in urination is common. However, vague and obscure perineal discomfort, pain in the urethra with or without chronic discharge, are often readily relieved by dilatation of a stricture, and then curing the lesions of the mucous membrane by endoscopic treatment. In two cases the only symptom complained of was nocturnal enuresis.

The operation we prefer for impassable stricture where the usual internal urethrotomy cannot be performed, is the introduction of an endoscope into the urethra down to the stricture, and division of the stricture under direct vision with a special knife. In case acute retention is present, a suprapubic tapping is performed before the introduction of the endoscope. A large retaining catheter is placed at the conclusion of the operation which is kept in for from three to eight days, depending upon circumstances. The bladder, of course, is irrigated at least twice in twenty-four hours. This treatment has been exceptionally satisfactory.

Bladder tumors (papillomata) can be destroyed and cured by fulguration. Carcinoma, when suitably located, should be excised, otherwise fulguration may be used. We have had no experience with radium.

For operations upon the prostate the suprapubic route is used entirely for the adenomata, and the operation concluded in one stage if possible. However, if conditions do not warrant it the two stage is always used. For small prostates malignancy or inflammatory conditions, which are the source of focal infection the perineal route seems preferable.

## KIDNEY

	No	Treatment	Result
Acute Pyelonephritis	4	2 operated, 2 treated	All recovered
Chronic Pyelonephritis	6	1 operated	Recovered
		2 refused operation	
		3 recovered after division of urethral stricture Patent ureter demonstrated in one case, cystography not made in others	
Movable Kidney	5	2 operated, 3 not operated	All did well
Calculus	3	2 nephrectomy	
		1 passed spontaneously.	All good recovery
Tuberculosis	6	3 nephrectomy	All good recovery except one, who died five months later with tuberculosis
		1 operated (having bilateral lesion) by another surgeon	Died
		1 far advanced, died of tubercular meningitis before operation	
		1 refused operation	
Hematuria	1	From systemic anemia	Not treated
Hypernephroma	1	Nephrectomy	Died two weeks later
Renal Papilloma	1	Nephrectomy (operated by another surgeon)	Recovered
Polycystic Kidney	1	3 cysts excised	Recovered
Bacteriuria	8		

## BLADDER

	No	Treatment	Result
Calculus	5	All operated	4 recovered; 1 died One of those who recovered was operated in another clinic
Tumors (papilloma)	6	Fulgerated	Recovered
Carcinoma	7	5 far advanced, palliated	All died
		2 moderately advanced, 1 operated	Died
		1 refused operation	
Tuberculosis	2	1 secondary to kidney	Conservative treatment
		1 secondary to vesiculitis	Conservative treatment
Chronic Cystitis	7	All urethral in origin	
		1 had sclerotic areas in bladder wall	
		1 complication of broken back	
		1 tabes	
Trigonitis and Chronic Urethritis	9	Local treatment	All cured
Phosphaturia	2		Cured

## URETHRA

	No	Treatment	Result
Acute Urethritis	6	One complicated by cowperitis and one by peri-urethritis	5 recovered, 1 left hospital
Chronic Urethritis	11	6 gave symptoms of sexual disturbance	All were practically recovered when discharged
		3 perineal sections	All recovered
		8 internal urethrotomy	All recovered
		6 direct urethrotomy (Parmenter)	5 recovered, 1 died suddenly six days later
		7 dilated	All recovered

Cases classed as bacteriuria were, after thorough search, found to depend upon a focal infection and to no demonstrable lesion of the kidney. The organisms were as follows: Colon, five, three of which the source of infection was not determined, two were improved upon elimination. The fourth, due to appendix, improved after appendectomy, the fifth due to appendix and gall bladder, showed no change as operation was refused.

Staphylococcus one, due to septicemia from

compound fracture of leg. Streptococcus and colon, one due to tonsils. Cured after tonsillectomy. Tubercle bacilli and colon, one, due to pulmonary tuberculosis.

Two of this number were complicated with fistula. One recovered and one left the hospital. Three others in this series had acute retention.

All stricture cases did well (with the exception of one who died) and left the hospital in good condition. A number of ward cases did not come back to continue treatment and their

#### URETHRA

	No	Treatment	Result
Circumcise	3	1 cauterized 2 excised	Unknown Good
Perforation due to rectal carcinoma	1		
Papilloma	1	Fulgurated	Cured
Calculus	1	Pushed back in bladder and removed with crusher	Cured

#### INFLAMMATION OF PROSTATE AND VESICLES

	No	Treatment	Result
Acute Vesiculitis	19	2 had joint complications 16 had epididymitis. Of this number the epididymus was drained in six cases, one refused treatment.	All treated were cured
Chronic Vesiculitis (Complications)	38	Joints, 5 cases Joints and epididymitis together 2 cases Epididymitis 3 cases	

#### PROSTATE

	No	Treatment	Result
Complicated by Stricture	1	Bar excised by punch	Recovered
Carcinoma	6	Of these four were inoperable two were operated upon by perineal route—both patients died, one in two weeks the other twelve weeks later.	

#### TESTES

	No	Treatment	Result
Acute Orchitis	1	Focus not found, drained	Practically total destruction of testicle
Hydrocele	4	2 sac excised 2 sac inverted	All recovered

#### PENIS

	No	Treatment	Result
Phimosis	6	2 complicated by chancroids 1 by chancre 2 sclerosis with fibrous ring, all circumcised	All recovered
Bubo	3	Excised	Recovered
Venereal	3	Excision of veins	Recovered

whereabouts is unknown Those who continued treatment have all done well

Since the special method of direct urethrotomy has developed, it has not been found necessary to do a perineal section in any case

Results of treatment (operative) Joint cases four treated by vas puncture and collargol injection—three cured One recurred, for which vasectomy was performed One treated by massage, recovered

Joints and epididymitis together one was drained, the other one treated by massage Both recovered

The three cases of chronic epididymitis were cured by vas puncture

In the remaining 28 the vas was punctured in three cases with good results, and the remainder, with the exception of a few Ward cases which did not return for treatment, all recovered under the usual treatment

Prostate and vesicles (diagnostic) 14 cases

The above mentioned cases, 14 in number, have appeared for examination usually complaining of a slight urethral discharge in the morning In these cases, careful examination of the patient's vesicles and urethra failed to show any organisms, and the condition seemed to be entirely of a catarrhal nature, due, probably, in some cases, to an antecedent infection which had completely died out In others however, there was absolutely no evidence in the history or upon examination, of any previous infection

These cases were found exceedingly difficult to cure, in as much as slight discharge would invariably return about ten days after massage Sexual neurosis, also, seemed to play a role

Tubercular vesiculitis and epididymitis four All treated conservatively—none were cured

#### PROSTATE

Adenomas 25 Of these 25 cases 11 were operated upon by the suprapubic route (nine by the one-stage operation, two by the two-stage operation, all recovered with satisfactory results, except one who died This patient was moribund, and the first-stage bladder drainage only was done)

Six refused operation Five were treated by dilatation, congestion only being present, without marked obstruction and no residual In the remaining three cases the lesion occurred with systemic disease, and rendered operation out of the question

Subtrigonal hypertrophy was found in four cases, three were treated by Young punch—all recovered The fourth case was not operated as there was no obstruction Fibrous collar at vesicle neck

## Medical Society of the State of New York

The following Committees have been appointed by the President, Dr Halsted.

### *Committee on Narcotic Drug Addiction*

Edward B Angell, Rochester, Chairman  
William M Gibson, Utica  
Thomas H Farrell, Utica  
Charles F Stokes, New York City  
Howard C Taylor, New York City

### *Committee to Consider Economic Methods of Caring for the Public Health*

F Park Lewis, Buffalo, Chairman  
Charles G Stockton, Buffalo  
Hersey G Locke, Syracuse  
Parker Syms, New York City  
Dwight H Murray, Syracuse

### *Committee on Hospitals to Co-operate with the Council on Medical Education of the American Medical Association*

John L Heffron, Syracuse  
Samuel A Brown, New York City  
William Francis Campbell, Brooklyn  
Samuel W Lambert, New York City

#### MEETING OF THE COUNCIL

The meeting of the Council was held in Albany on May 23, 1918, Dr Thomas H Halsted, President, Dr Floyd M Crandall, Secretary

The meeting was called to order by the President at 12 M, and on roll call the following answered to their names Drs Thomas H Halsted, James F Rooney, W Meddaugh Dunning, Floyd M Crandall, Frederic C Conway, Dwight H Murray, Joseph H Hulett, Luther Emerick, Lew H Finch, G Massillon Lewis, John H Pratt

A quorum being present Dr Halsted announced the meeting open for business

The President appointed the following Committee on Publication Drs S W S Toms, Frank Van Fleet, Edward Livingston Hunt, A Clifford Mercer, W Meddaugh Dunning

Dr John Cowell MacEvitt was unanimously elected Editor for the coming year

It was moved, seconded and carried that, owing to Dr MacEvitt's absence in France, that an Acting Editor be appointed Dr Floyd Milford Crandall was elected Acting Editor

The President appointed the following Committee on Finance Drs Frank Van Fleet, Floyd M Crandall, Henry Lyle Winter

The President appointed the following Committee on By-Laws Drs Floyd M Crandall, Joshua M Van Cott, R Paul Higgins

The President appointed Dr George B Broad, of Syracuse, a member of the Committee on Scientific Work

The President stated that, in accordance with the resolution of the House of Delegates, that there was a special committee to be appointed on Narcotic Addiction, to consist of five members, but owing to the importance of this committee, he would defer the appointment until a later date

Moved, seconded and carried that the chairman of all standing committees be requested to send the names of the members of their committees to the Secretary of the State Society for approval by the Council

Moved seconded and carried that the selection of the date of the next annual meeting be left to the President and Secretary of the State Society and the Chairman of the Committee on Arrangements to decide.

Moved, seconded and carried that the Committee on Finance authorize such expenditures as it considers advisable and that the officers, chairmen and members of committees incur no expense on behalf of the society, except railroad fares, without the approval of the committee.

Moved seconded and carried that in order to encourage increase in membership in the State Society, all members who are elected between October 1, 1918 and December 31 1918 and who shall pay during that period their state assessment, may have the same credited to 1919, provided that they request it. All whose assessments are so credited shall be entitled to mal practice defense for 1918 but shall not be entitled to receive the Directory or Journal for 1918. State assessments so credited shall be immediately forwarded by the County Treasurer to the State Treasurer.

Moved seconded and carried that officers and members of committees upon presentation of proper vouchers may have their railroad fares paid for attending regular meetings, provided the bills are presented within sixty days after they have been incurred otherwise they will not be paid.

That delegates to the American Medical Association may have their railroad fares paid upon presentation of proper vouchers on condition that they attend all meetings of the House of Delegates. Bills for said expenses must be presented for payment within sixty days after they have been incurred, otherwise they will not be paid.

Moved seconded and carried that the Secretary be instructed to write to the secretaries of the county societies which have not taken action in regard to paying the dues of members in military service and draw their attention to the serious consequences which would ensue from the loss of revenue from the dues of such members and request that the society follow the example of a number of the county societies and pass the following resolution.

That the County Society pay the state per capita tax of members in active military service and that the Treasurer be instructed to remit the same to the State Treasurer.

There being no further business the meeting adjourned at 1 P M.

FLOYD M CRANDALL Secretary

Date selected May 6 1919

## County Societies

### MEDICAL SOCIETY OF THE COUNTY OF COLUMBIA

THE SEMI-ANNUAL MEETING CHATHAM  
May 28 1918

Among the important business of the meeting was the incorporation in the minutes of proceedings of the citation of the fact as published in the press that one of the members of the Society Capt Henry C Galster had received the British military cross for exemplary valor. A resolution was passed a copy of which was sent to the press and to Captain and Mrs H C Galster.

#### SCIENTIFIC SESSION

Acute Gluecoma ' by A J Bedell M D of Albany who gave a very concise treatise on the subject. Dr C J Rossman opened the discussion.

Diseases of the 'Ductless Glands' by Joseph J Rooney M D of Albany who presented stereopticon views and read a paper that was much appreciated by the society.

The society voted to pay the dues of members in military service.

### MEDICAL SOCIETY OF THE COUNTY OF CLINTON

SEMI ANNUAL MEETING PLATTSBURG  
May 21 1918

The meeting was held in the Arcade Hotel. After a luncheon which was served at 12 o'clock the meeting was called to order by the President Dr M B Holcombe.

It was decided to have the Scientific Program before the business session to accommodate the visiting officers from the Post Hospital at Plattsburg Barracks.

Lieut Col A W Williams was to have addressed the society on the general subject of 'Medical Preparedness' but was transferred from Plattsburg a few days previous to the meeting. Major Tobin in his stead read a letter from Surgeon General Gorgas presenting in brief the status of the Medical Reserve Corps and the relation in general of the Medical Profession to it.

Capt Hamlin and Lieut Fisher each gave a short talk on the need of the Medical Reserve Corps for more members.

Dr L F Schiff read an interesting paper on 'Vesical Pregnancy'.

#### BUSINESS SESSION

Dr Joseph Laury Remillard Rouses Point was elected a member.

Dr McKinney Vice Chairman of the Local Committee of Medical Defense reported that everything possible had been done to protect the interests of the Local Medical men who are away in service.

The Committee on Tuberculosis Hospital reported that the Supervisors gave a deaf ear to any proposals or suggestions from the committee. It was moved seconded and carried that the committee be discharged with the thanks of the society.

Dr Schiff moved that the County Society go on record as favoring a selective draft of physicians for the Medical Reserve Corps and that a copy of the motion be sent to the State Branch of the Council of National Defense. Seconded and carried.

### MEDICAL SOCIETY OF THE COUNTY OF ESSEX

ELIZABETHTOWN June 4 1918

The meeting was called to order at 2.20 P M in the Deers Head Inn by the President Dr J P J Cummings. Roll call showed the following members present.

Drs L G Barton L G Barton Jr G W Bond J Breen T H Canning J P J Cummings T J Cummings E R Eaton J H Evans C S Faulkner G S Houghton and C R Payne.

The following were present as guests.

Drs V H Coffee Orwell Vt C H Beecher Burlington Vt E G Brown Glenburne Lake George, A E Falkenbury Whitehall R S Macdonald Plattsburgh S A Reed Port Henry M E Sargent Ticonderoga A H Traver Albany.

The minutes of the last meeting were read and approved.

The Secretary reported one member lost by death since the last meeting and two members gained by transfer.

The President appointed as committee to draft resolutions of regret on the death of Dr Merritt E Proctor of Lake Placid Drs D Aignon Jr Smith and Hunt.

#### SCIENTIFIC PROGRAM

- 1 Ectopic Pregnancy A H Traver M D Albany
- 2 Perforated Gastric Ulcer R S Macdonald M D Plattsburg

3 "Management of Diabetics," C H Beccher, M D, Burlington, Vt., Professor Internal Medicine, University of Vermont

4 "A Case of Hour-Glass Stomach," A E Falkenburg, M D, Whitehall Illustrated by X-Ray plate

A full discussion of all papers followed

A rising vote of thanks was tendered to the speakers for their courtesy in addressing the society

## MEDICAL SOCIETY OF THE COUNTY OF MONROE

REGULAR MEETING, ROCHESTER

Tuesday, May 21, 1918

The meeting was called to order at 2 P M, at the Rochester Medical Association, by the President, Dr J P Brady

The minutes of the previous meeting were read and approved The Secretary gave the report of the Committee Minora

It was moved, seconded and carried that the Secretary cast one vote for Dr H W Edwards as a new member

The Secretary reported the death of Dr Carpenter, of Pittsfield, and it was decided that a committee from this society unite with a committee from the Pathological Society to draw up resolutions

Dr Roby proposed the following resolution

"WHEREAS, The advance in medical science in the past few years has been so great as to almost banish some diseases from the Army and markedly lessens the mortality of others, as evidenced by the fact that had the incidence of typhoid in 1898 kept up in 1917 there would have been about 144,000 cases of typhoid in the Army, instead of 114, and by the almost total absence of smallpox, tetanus, malaria, yellow fever, etc, not to mention the advance in the treatment of meningitis, pneumonia and diphtheria

"WHEREAS, The hope of the future lies almost entirely in experimental medicine, be it

"Resolved, That the President be requested to deny the use of the U S Mail to Life and any other newspaper or periodical showing evidence of insidious pro-German, anti-vivisection and anti-vaccination propaganda And, further, be it

"Resolved, That the Red Cross be petitioned to use its money without stint for the advancement of medical knowledge wherever and whenever it may seem necessary And, further, be it

"Resolved, That a copy of these resolutions be sent to the President, the Secretary of War, the Postmaster General, the Surgeon General and to other medical and lay organizations, requesting them to take similar immediate action"

It was moved, seconded and carried that the resolution be adopted as read

Dr Dow suggested that specific dates of these above mentioned publications be stated in the resolution The resolution has been placed in these records

## SCIENTIFIC PROGRAM

"Prophylaxis of Communicable Diseases," Joseph Roby, M D, Rochester

"Under Nutrition," Charles R Witherspoon, M D, Rochester

"Diseases of the Sinuses," Philip Conboy, M D, Rochester

"Bone Graft," Howard L Prince, M D, Rochester

"The Fundamental Problem in the Treatment of Diabetes Mellitus" John R Williams, M D, Rochester  
The President appointed Drs Zimmer, Barber and Dow as a committee to draw up the resolutions for Dr Carpenter

## MEDICAL SOCIETY OF THE COUNTY OF ERIE

REGULAR MEETING, BUFFALO

Monday, June 17, 1918

The meeting was called to order at 9 P M in the Buffalo Medical College

In the absence of the President, Dr Cott, the First Vice-President, Dr James E King, presided

The Secretary read the minutes of the regular meeting, held April 15th, also the Council meetings, held May 13th and June 17th, which were approved as read

Dr Jacobs, Chairman of the Committee on Membership, presented the name of George W. Schaefer for re-election, Dr Schaefer having resigned at the time he left Buffalo, and also the name of Guy L McCutcheon, for re-instatement

On motion the Secretary was instructed to cast the ballot of the society for the re-election and re-instatement of these men

Reports of the committees being called for Dr Woodruff presented a verbal report of part of the work done by the delegates to the State Society He also reported briefly for the committee relative to medical fees

Dr Lytle made a brief verbal report for the committee on the Home for Feeble Minded at Akron, all of which were accepted

Dr Lytle stated that under the by-laws the Treasurer is required to report the names of all those who are in arrears with their dues at this meeting On motion the reading of these names was dispensed with

The Secretary called attention to the resolution adopted by the Council relative to the payment of state and county dues of members who are in the Federal service, and also called attention to the action taken by the State Society regarding this question

On motion of Dr Gram it was resolved that the question of remission of state and county dues of all such members who are in arrears on December 31, 1918, by reason of the fact that they are in the Federal service be left to the Council with power The motion was adopted

Dr Lytle, President of the Eighth District Branch, stated that although the last meeting of this Branch was held in Buffalo in 1917, the members were inclined to return to Buffalo for their 1918 meeting, on account of the better facilities offered both for reaching the city and for holding meetings

On motion of Dr Gram the Eighth District Branch was invited to hold its next meeting in Buffalo in September

Moved by Dr H H Glosser that it is the sense of this meeting that the physicians of Buffalo should live up to the state law and city ordinance and report all venereal diseases coming to their notice The motion was adopted

The paper of the evening was then presented by Walter S Goodale, M D, Superintendent of Hospitals and Dispensaries, on "The Control of the Venereal Infection"

This paper was discussed generally by members present and heartily recommended by every speaker

## MEDICAL SOCIETY OF THE COUNTY OF SCHOHARIE

SEMI-ANNUAL MEETING, MIDDLEBURGH

June 18, 1918

The meeting was called to order in the Hotel Baker

The day was perfect and the attendance large The papers, "Treatment of Epithelioma With X-Ray," H B Bartholomew, M D, Cobleskill "The New Public Health," W T Rivenburgh, M D, Middleburgh and "Report of Case for Diagnosis," W W Burgett, M D, Fultonham, were all excellent and the discussion, which followed, interesting

At the business session the following were placed in nomination For President W W Burgett, Vice President H B Bartholomew, Secretary, H L Odell, Treasurer L R Becker, Censor W I Rivenburgh, delegate to State Society H J Wright Alternate L B Bartholomew

The society voted to pay the state assessment of the members in service during the continuance of the war. On account of the condition of the roads and previous notice having been given it was voted to have the annual meeting on the second Tuesday in October and the semi annual meeting the second Tuesday in May

## MEDICAL SOCIETY OF THE COUNTY OF OSWEGO

SEMI ANNUAL MEETING ORWELL

June 4 1918

The meeting was held at the Oswego County Sanitarium the President F L Sin Clair presiding. The following resolution was passed

'WHEREAS, With patriotism and at a personal sacrifice members of the Medical Society of the County of Oswego have entered various branches of the military service of our country be it

*Resolved* That during the absence of these members this society remit all local dues of such members and authorize its Treasurer to pay from the society funds the dues of said members to the State Society

The following Scientific Program was then in order the first paper being by Dr LeRoy F Hollis on 'Tuberculosis'. A free discussion followed in which Major McEvoy of Base Hospital No 5 took active part advancing radical ideas of great interest. The paper was intensely practical and worthy of publication

Vice Presidents address Placenta Praevia, E. M. Anderson M D Fulton

Discussion by J K Stockwell M D Oswego

Address Health Insurance Hon James M Lynch Syracuse

Hemorrhagic Disease in the New Born H M Doane M D, Fulton

Discussion by E J Cusack M D Fulton

The Secretary read some correspondence from the Committee of National Defense and a list of Oswego County physicians

Following a most excellent luncheon provided in the Sanitarium the Hon James M Lynch addressed the society. His talk exciting considerable discussion and undoubtedly opening the eyes of many physicians to the force of the movement for the enactment of a Health Insurance Law

The interest in the meeting was much enhanced by the large attendance of physicians from Base Hospital No 5 representatives from several states

## WYOMING COUNTY MEDICAL SOCIETY

REGULAR MEETING PERRY MAY 28 1918

The meeting was called to order at 2 P M in the Perry Club and the following papers were presented

'Appeal for Further Enlistments in Medical Reserve Corps J R Brownell M D Perry

'Experience in Cantonment Work' L E Stige M D Bliss

Discussion by G H Peddle M D Perry

Report on Health Insurance Ross Thomson M D Warsaw

## Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from the volumes will be made for review as dictated by their merits or in the interest of our readers

**APPLIED BACTERIOLOGY—STUDIES AND REVIEWS OF SOME PRESENT DAY PROBLEMS** For the laboratory worker the clinician and the administrator By C. H. Browning M D DPH Director Blind Sutton Institute of Pathology Middlesex Hospital London, Henry Frowde Hodder & Stoughton Oxford University Press Warwick Square E C 35 W 32d St N Y City Price \$2.50

**INFECTION AND RESISTANCE** An Exposition of the Biological Phenomena Underlying the Occurrence of Infection and the Recovery of the Animal Body from Infectious Disease By HANS ZINSSER M D Prof Bacteriology College Physicians and Surgeons Columbia University, Bacteriologist Presbyterian Hospital N Y With a chapter on Colloids and Colloidal Reactions Prof STEWART W YOUNG Department of Chemistry Stanford University 2d edition, revised New York The Macmillan Company

**HOW TO ENLIGHTEN OUR CHILDREN** A Book for Parents By MARY SCHUBERT M D M S New York Chicago Toronto London and Edinburgh Fleming, H. Revell Company

**NINE HUMOROUS TALES** By ANTON CHEKHOV Translated by Isaac Goldberg and Henry T. Schmittkin Boston The Stratford Company Publishers

**DISEASES OF THE HEART THEIR DIAGNOSIS PROGNOSIS AND TREATMENT BY MODERN METHODS** With a Chapter on the Electro Cardiograph By FREDERICK W. PRICE M D FRS (Edin) Physician Great Northern Central Hospital Assistant Physician National Hospital Diseases of the Heart London London Henry Frowde Hodder & Stoughton Oxford University Press Warwick Square E C 35 W 32d St N Y City Price \$7.50

**THE DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES IN GENERAL PRACTICE** By L. W. HARRISON D SO Licut-Colonel R A M C Lecturer on Venereal Diseases and Officer in Charge Military Hospital Rochester Row London Henry Frowde Hodder & Stoughton, Oxford University Press Warwick Square E C 35 W 32d St, N Y City Price \$7.50

**RECLAIMING THE MARRIED** A Handbook of Physical Therapy By R. TAIT MCKENZIE, M D Major R A M C Professor of Physical Therapy University of Pennsylvania Illustrated New York The Macmillan Company

**ALCOHOL HABIT AND LEGISLATION** By EDWARD HUNTINGTON WILLIAMS M D Formerly Assoc Prof Pathology State University of Iowa Assoc Editor Encyclopedia Britannica (Tenth Edition) New York The Gnodine Company

**THE PREVENTION OF VENEREAL DISEASES** By OTTO MAI M A M D (Cantab) M R C P (London), Late Hon Secretary National Council for Combating Venereal Diseases London Henry Frowde Hodder & Stoughton Oxford University Press Warwick Square E C 35 W 32d St N Y City Price \$3.00

**THE UNGUARDED MIND** By ROBERT HOWLAND CHASE M D M D Physician in Chief Friends Hospital (for Mental Diseases) formerly Resident Physician State Hospital Norristown Pa Member of the American Medical Psychological Association Illustrated Philadelphia F A Davis Company Publishers English Depot Stanley Phillips London Price \$2.75

**THE TREATMENT OF WAR WOUNDS** By W. JEFFERSON M D, LL D Emeritus Professor of Surgery Jefferson Medical College Philadelphia Second Edition Reset 12mo 276 pages illustrated Philadelphia and London W B Saunders Company 1918 Cloth \$2.00 net

A COMPEND OF HUMAN PHYSIOLOGY, Especially adapted for the use of Medical Students, by ALBERT P. BRUBAKER, A M, M D., Prof. Physiology, Medical Jurisprudence, Jefferson Medical College Fourteenth edition, 26 illustrations Phila., P. Blakiston's Son & Co., 1012 Walnut Street [1917] Price, \$1.25 net

The fourteenth edition is in itself evidence of the popularity of the little volume.

It is an up-to-date work and one every medical student would do well to own for a quiz companion.

The subjects are clearly and thoroughly discussed, in a brief, concise manner, and can be used to advantage by anyone desirous of knowing the house we live in and arrangement of its apartments and how they work. The pruning of the last edition and addition of new subject matter brings it up to date, and will enhance its value to the student.

The chapter on Foods and Dietetics should be especially interesting at this time, and is abreast of the times. The subject of secretions, external and internal, gives a concise description of the working of the glandular system, and their part in the growth and nutrition of the body as a whole. The organs of special sense are not neglected, but dealt with in a clear style, and their workings described.

In fine, it is a book worthy of its title "Compend"  
E. M. CHILD

THE INVOLUNTARY NERVOUS SYSTEM By WAITER HOLBROOK GASKELL, M A, M D, FRS Author, "The Origin of Vertebrates," etc., colored figures Longmans, Green & Co., London, Fourth Avenue and 30th Street, New York, Bombay, Calcutta and Madras, 1916 Price, \$1.80 net

This volume of 160 pages with an additional bibliography of fourteen pages is one of a series of eight monographs edited by Ernest H. Starling, M D, D Sc, F R C P, on certain chapters in physiology in which widening knowledge is making the forward movement most pronounced. The editor in his preface writes that "each monograph will contain an account of our knowledge of some particular branch of physiology written by one who has himself contributed in greater or less degree to the attainment of our present position. It is hoped thus that the outlook of each monograph will be forward rather than backward. An exhaustive account of previous writing on the subject concerned is not aimed at, but rather an appreciation of what is worth retaining in past work, so far as is suggestive of the paths along which future research may be fruitful of results. The more valuable the monographs in inspiring the work of others the greater will be the success of the series." This much of the editor's preface has been quoted because it expresses a wish which Dr Gaskell has so ideally and inspiringly fulfilled in this volume.

It is to Dr Gaskell that we owe much of our present knowledge of what he terms the "involuntary nervous system," and in this monograph he presents a consistent and harmonious account of the plan of innervation of all the involuntary muscular systems in man. Dr Gaskell has attempted to place the involuntary nervous system on the same footing as the voluntary nervous system by comparing the nervous elements (receptor, connector, excitor, sensory, etc.) of the two systems not only from the physiological but from the morphological standpoints. The book is well planned, the sequence is good and logical and the language clear. Dr Gaskell has certainly clarified and solidified our knowledge of the innervation of the involuntary muscular systems. The book is adequately illustrated.

A POCKET FORMULARY By E. QUIN THORNTON, Assistant Professor of Materia Medica in the Jefferson Medical College, Philadelphia Eleventh edition, revised Philadelphia and New York, Lea & Febiger, 1918 292 pp 16mo Cloth, \$2.00

Of course, stereotyped prescribing is to be condemned, and the idealist will argue that formularies tend to perpetuate the practice, but the fact that this book has gone through eleven editions suggests that many practitioners still "follow the lead" of so-called leaders and prescribe as they do. The time may come when therapeutics think for themselves in the construction of their prescriptions, but evidently that time has not arrived, until it does arrive formularies will be used.

Dr Thornton's book has the merit that it does not suggest shot-gun combinations, indeed, the formulae suggested are well constructed and scientifically combined. It may be said that if practitioners must use a formulary this one is probably the best of its kind.

M. F. DEL

A MANUAL FOR CLINICAL DIAGNOSIS BY MEANS OF LABORATORY METHODS, for Students, Hospital Physicians and Practitioners By CHARLES E. SIMON, B A, M D Ninth Edition, enlarged and thoroughly revised Illustrated Phila. and New York, Lea & Febiger, 1918 851 pp 8vo Cloth, \$6.00

The ninth edition of this work brings up to date all laboratory procedures of established value which are employed in establishing the etiology, diagnosis, or in the treatment of disease.

This volume is conspicuous not only for what it contains (and it contains many important facts not found in other books) but also for what it omits. Statements of doubtful value or that would only be a repetition of facts already stated are judiciously omitted. At the same time it is too bad that such a thorough and exhaustive work should be marred even by typographical errors. For instance, in discussing hemophilia, on page 678, under the caption "Essential Factors," it gives "diminution in the number of plaques" as one of the essential factors of hemophilia, which, of course, is all wrong. That it is a typographical error we know from what appears on page 679, lines 1 and 2 "In contradistinction to the purpuras, where the plaques are diminished hemophilics show no deviation in their number."

W. LINTZ

## Deaths.

EUGENE WILSON CALDWELL, M D, New York City, died June 20, 1918

PAUL D. CARPENTER, M D, Pittsford, died June 4, 1918

WILLIAM DILLON, M D, Brooklyn, died June 26, 1918

VALENTINE MOTT, M D, Oyster Bay, died June 19, 1918

WILLIAM MCKELLENBURG POLK, M D, New York City, died June 24, 1918

GEORGE EDWARD SWIFT, M D, Hudson, died May 31, 1918

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M D Editor

FLOYD MILFORD GRANDALL, M D, Acting Editor

Business and Editorial Offices: 17 West 43d Street New York, U S A

Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N Y U S A

## COMMITTEE ON PUBLICATION

S W S Toms M D Chairman Nyack

Edw rd Livingston Hunt M D New York

A Clifford Mercer M D Syracuse

W Meddaugh Du ni g M D B x

Frank Van Fleet M D New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

AUGUST 1918

No 8

## EDITORIAL DEPARTMENT

### DISTRICT BRANCHES

**I**N the scheme of medical organization in this State, the District Branch is a very important factor Its value has come to be more fully realized during the last few years, but is not yet adequately appreciated in many portions of the State

Throughout the United States, the County Society is the basis unit of medical organization As pointed out in these pages, in October of last year, medical organization in this State, as in most other states, consists of two sections—the County Society section and the State Society section These two make up the medical organization In New York, under State laws, they are one and inseparable

In New York, owing to its remarkably varied and heterogeneous elements of geographical formation and mixed population, a third factor seems necessary, that of sectional grouping and representation In the small states and those of homogeneous formation, one body is adequate to represent the profession In New York an intermediate element is necessary, an element to

represent the varied localities and the interests which pertain to varying regions This element is the District Branch The formation of such branches is a monument to the wisdom of those who reorganized the Society twelve years ago

The membership of the State Society was then divided into eight local branches to correspond with the eight judicial districts of the Supreme Court of New York Some criticism has been expressed as to the wisdom of this grouping at the present time A year ago therefore, the State Society appointed a committee of three members, consisting of the presidents of District Branches in eastern, central and western portions of the State, to consider the advisability of readjusting the Districts After thorough study, it was found by this committee that there was not sufficient desire among the Counties to warrant a change in the alignment of the District Branches They will undoubtedly remain for a long time as they are now constituted

For some time the District Branches languished and did not fulfill the hopes of the founders Of late, however, they have come into their own and

are fulfilling in most cases the functions expected of them. Several reasons may be found for this change, the two most important being the construction of admirable roads and the increasing use of high-power automobiles by physicians. A third, and probably less important reason, is the network of trolley roads that now covers the State. These roads and trolley lines are constructed with little reference to county boundaries. A doctor to-day by an easy auto trip may reach the meeting place of his District Branch that ten years ago would have involved hours of travel on the steam railways.

In 1916 the attendance at the District Branch meetings was phenomenal. Notwithstanding war conditions last year, the attendance in almost every instance was larger than was expected by the officers. In short, the meetings of the District Branches are popular, and appeal to the physicians of the locality. Some of the reasons for this are clear to one who goes from meeting to meeting. They are not obscure or difficult to discover. They are inherent in the very organization of the District Branch and are two in number. The first is the fact that the District Branch is a pure democracy. Every member has equal rights with every other member. There is no House of Delegates. Certain counties, however, continue to elect delegates to the Branch although that system was abolished a number of years ago. The meetings for all business and scientific purposes are open to every member.

This should not be construed as a criticism of the House of Delegates of the State Society, which is a necessity when great numbers are involved. At the town meeting every citizen may properly take part in the government of the town. In the State, with its eleven million people, a representative form of government is imperative. It is so in our Society. The comparatively small meetings of the County Societies and District Branches make a pure democracy possible for them. In the State Society, with its 8,595 members, distributed among sixty County Societies

over 47,000 square miles, a representative form of government is equally imperative.

A second reason for the popularity of the District Branch meetings is the character of the papers. The writer of a paper, even if a specialist, knows that he is to read before a mixed audience, and it is a striking fact that the papers in a large measure are adapted to such an audience.

In many meetings, outside talent is brought in and now almost every meeting has something pertaining to the War or to military surgery or medicine, all of which is proper and commendable to a high degree. The basis of most programs, however, is furnished by local talent, and we say "talent" advisedly, for there is to-day not a District that has not plenty of it. Local talent knows local needs and provides something to meet them. Programs of the District Branch meetings are usually more satisfactory than those of the County Society meetings, for the officers have the best from several counties to draw from. As a simple fact, the scientific character of the average District Branch meeting is exceedingly high.

The fundamental object of the District Branch is to represent a locality. It is not a valid criticism that the membership of the Branches varies in number. A locality with a sparse population and few physicians has its needs, interests, and rights, and is deserving of representation. It was a wise and generous provision that these Branches, small in numbers, should not be discriminated against for the Branches of larger numbers. It is proper that each group and locality should have its special representatives in the great governing Boards of the Society.

Each District Branch, by special provision of the By-Laws of the State Society, may adopt a Constitution and By-Laws for its government, provided they do not conflict with the laws of the State and of the State Medical Society. The By-Laws of each Branch are formed upon one model, but in some Branches changes have been made to conform with local requirements.

The presidents of the District Branches are very important officers. They are not only local officers with duties pertaining to the Branch, but they are also officers of the State Medical Society, a fact that is not always understood. The officers of the State Society are sixteen in number, namely, a president, three vice-presidents, a secretary and treasurer and their assistants, and the councillor of each District Branch.

The By-Laws designate the president of the District Branch as its Councillor. This title, *Councillor* is a most important one and we wish to give it particular emphasis. The By-Laws require that each Councillor shall visit at stated intervals the County Societies of his branch for council and guidance. This may be called a routine duty, and is a wise provision. For many years the Councillors have been men of judgment and experience and of judicial temperament. These three qualifications should be those considered in the election of the Councillor. This duty of visiting the County Societies is also shared by the Societies as well as the Councillor. The Societies should confer with their Councillor and arrange certain of their meetings at a time and place that he may most easily reach. The value of such conferences can hardly be overestimated.

The Councillor has another important function. It is an unfortunate fact that County Societies sometimes fall into controversies, partisan lines are drawn, and it is difficult to come to an understanding. They are detrimental not alone to the County Society, but to the whole organization. Here is a place where the advice of the Councillor may be properly sought. He comes from outside and is unbiased, and the responsibility of being a mediator tends to render him cautious and judicious. He has no authority to render a verdict or to enforce action upon either faction. He may, however, by wise assistance do much to terminate an unfortunate misunderstanding.

In cases of misunderstanding or diverse interpretation of By-Laws, the advice of the State Secretary may be sought, for he is vested with special functions in this direction. He has in his desk the By-Laws of all the County Societies and is in constant touch with the By-Laws of the State Society and the American Medical Association.

He is glad at any time to render assistance in interpretation of questions pertaining to the organic law of State and County Societies.

We have thus far considered the Councillor as a local officer. His duties as a State officer are very great and are of the utmost value to the locality he represents. He is a member of the House of Delegates, the Council, and the State Board of Censors. In the first body his influence is representing a group of Counties as great. Councillors have not infrequently acted as a balance wheel in the proceedings of the legislative body of the Society.

In the Council, which is the *executive* body of the Society, the eight councillors have a potent influence. It is in this important body that they may best represent their districts, having the power to bring before it petitions, complaints, or recommendations desired by their constituents.

The State Board of Censors is an appellate court and in many aspects represents the Court of Appeals of the State. It is fortunately not often called together but when it is it is a court of great importance. It consists of the President and Secretary of the Society, and the eight District Councillors. When the court is convened to adjudicate a question of Society law, the President acts as presiding judge, the Secretary of the Society as its clerk, the Counsel of the Society as its legal advisor and the Councillors as the jury.

It is thus clear that the eight councillors are officers of great influence and great importance and that wise provision has been made for the protection and representation of the various localities of the State.

We would call special attention of the County Societies to the fact that there is no House of Delegates in the District Branches, and no delegates therefore, are to be elected to the Branches. That system was abolished years ago and yet certain County Societies continue to elect District Branch delegates. Such delegates naturally feel aggrieved upon reaching the meeting to find that their services are not needed. The District Branch meetings are open to all. Nominations are made and elections are held in open meeting and every member has the right to participate in all business and scientific discussions and is entitled to vote upon any question that may be presented.

## Original Articles.

## OPHTHALMIC CHANGES IN TABES AND PARESIS, THEIR RECENT PATHOLOGY AND DIAGNOSIS, PARTICULARLY WITH REFERENCE TO CEREBROSPINAL SYPHILIS WITH A STUDY OF 122 CLINIC CASES AND TWO TABLES†

By ISRAEL S. WECHSLER, M.D.,

NEW YORK CITY

## INTRODUCTION

THE great amount of study that has been devoted to the ophthalmic disturbances of tabes, general paresis and diffuse neurosyphilis and the voluminously compiled facts observed as to symptoms, incidence, etc., seemed to make the subject a closed chapter. So well, in fact, have statements come to be accepted that it would have been naive heresy, for instance, to question the primary, purely degenerative nature of the optic atrophy in tabes.

But as far back as 1902 Kéraval and Raviart pointed out that the optic atrophy in tabes and general paresis was not a simple, degenerative process. Marie and Lévi, 1904, sought to bring this conception a step further. The work of both fell on unreceptive soil. Stargardt, in 1913, very exhaustively studied the subject and not only confirmed the work of Marie and Lévi but altogether denied the existence of purely degenerative processes in tabes and paresis. Schoenberg in this country, in 1916, called attention to the above investigations and added his own study, pointing to a newer conception. I shall refer to their work in greater detail later.

Other events, too, served to alter in part our conception of syphilis of the nervous system and the neurology of the eye. The discovery of the spirochete and the synthesis of arsenobenzol revolutionized etiology and therapy, while to the work of Schaudinn and Ehrlich was added the intraspinal treatment initiated by Swift and Ellis. The routine examination of the spinal fluid made possible by the work of Quincke and later the epoch-making researches of Wassermann, followed by the investigations of Ravaut, and finally Lange-Szigmondi, added to the refinement of diagnosis. The investigations of Moore, Nogouchi and Levaditi fixed the guilt upon the heads of the spirochetes as the direct etiological culprits in tabes and paresis. The very lucid distinction of Head, in 1914, on embryological grounds, that is, parenchymatous

and interstitial or vascular involvement, or ectodermal and mesodermal lesions, also served to clarify the subject.

## THE PROBLEM

In view of recent investigations it is evident that the pathology of optic changes in tabes and paresis does not present the finality which, for instance, Uhtoff and Wilbrand and Saenger give to it. The questions are 1. Are the pathological changes in tabes and paresis giving rise to ocular manifestations fundamentally different from those occurring in interstitial-meningo-vascular syphilis? 2. Are the lymphocytosis, plasmacytosis and other inflammatory changes absent in tabetic and parietic eye palsies and optic atrophy and present only in so-called cerebrospinal syphilis? 3. Is the process on the one hand primarily degenerative and on the other consequent upon inflammation? To all these questions the answer must be, No. There is an etiological identity and pathological similarity in all syphilitic processes, be they parietic, tabetic or so-called cerebrospinal syphilitic, and an attempt will be made to prove this in the discussion of the pathology.

In the opinion of the writer, syphilis is one continuous disease, and while for convenience of classification one may speak of a primary, secondary, tertiary, or even quaternary, or the old meta and parasymphilitic stages, from the standpoint of pathology there is no fundamental difference between any one of those stages. The difference, if any, lies in the reaction of the structures of the body at various periods after infection or in the varied action of the spirochete after numerous vicissitudes in the body. It may safely be argued that the underlying pathological process of any syphilitic lesion, whatever its chronological manifestation, is essentially of one character, differing only in degree at various times and under various conditions, and depending upon the structures involved. Thus, while in so-called cerebrospinal syphilis the vascular, inflammatory, exudative process overbalances the degenerative changes, in tabes and paresis the latter is more marked and often completely overshadows the former.

As the term cerebrospinal syphilis is often meaningless and frequently confusing, I shall employ interstitial or meningo-vascular neurosyphilis in its stead. The terms parietic, tabetic, meningo-vascular, or diffuse, etc., neurosyphilis, as classified by Southard and Solomon, are much better. To avoid confusion, however, it will be necessary occasionally to employ the common designation, cerebrospinal syphilis.

The object of this paper, of course, is not to discuss the whole subject of the pathology of syphilis, but only that part which bears on the neurology of the eye. While, unfortunately, I have no original pathological sections, I have nevertheless sought to bring together facts re-

\* From the Department of Neurology, Columbia University, New York.

† Awarded the Lucien Howe Prize by the Medical Society of the State of New York, at the Annual Meeting held in Albany May 20, 1918.

cently gathered and shall attempt to discuss the ophthalmic changes in tabes and paresis from the point of view of more modern pathology. I have collected 122 clinic cases, and in reviewing their various ocular symptoms will compare them with previously gathered data, at the same time laying stress on the diagnostic differentiation from eye changes occurring in cerebrospinal syphilis.

Enough has been said to outline the aim of this essay, and it may be well to point out that the influence on therapy will be far reaching if the future will confirm the opinion that the optic changes in tabes and paresis are primarily inflammatory and degenerative only secondarily.

#### OPHTHALMIC CHANGES IN TABES AND PARESIS

With few notable differences the eye symptoms in paresis are practically similar to those occurring in tabes. Thus, while one may get visual disturbances in paresis due to involvement of the cortical centers, a picture one never sees in tabes the main character of the symptoms, their underlying pathological condition and their manifestation are the same in both diseases. Taboparesis, juvenile tabes and juvenile paresis also show almost identical clinical pictures, and only minor characteristics will have to be alluded to to show wherein they differ.

Cases quoted by Uhtoff 71 per cent showed the A-R pupil while the average in cases culled from literature is given at 67 per cent. Naturally the per cent incidence rises and falls with the stage of tabes under observation and a rigid pupil is the only symptom may precede by years the onset of tabes. How early pupillary changes are seen in tabes it is difficult to decide, some authors claiming to have observed them even in the first year of the infection. Voigt gives 73.5 per cent A-R out of a series of 150 cases, 3 per cent of his cases gave unilateral A-R 37 per cent were sluggish to light and 15 per cent were inactive to light and accommodation. In my series 32 per cent showed internal ophthalmoplegia and only 4.3 per cent of cases had normal reaction, while 8.7 per cent gave sluggish reaction to light. In 20 per cent of cases there is said to be a want of parallelism in the intensity of rigidity in both pupils. The A-R pupil is said to be found in 10 per cent of cases of interstitial neurosyphilis. Many authors (Erb, Djerme, Uhtoff, Oppenheim, Spiller and Camp) think an A-R pupil in cerebrospinal syphilis is in reality due to a co-existing tabes. Loss of consensual reaction runs parallel with rigidity to light. Sometimes loss of convergence accompanies rigidity to light (about 25 per cent of cases). Intermittent pu-

TABLE I—(92 CASES OF TABES)

SHOWING PER CENT INCIDENCE OF EYE SYMPTOMS

Pupillary Reaction	Size of Pupil	Shape of Pupil	Muscle Pal. res	Optic Atrophy	Nystagmus
Argyll Robertson 70 cases = 76%	Miosis 30 cases = 32.6%	Irregular 36 cases = 39.1%	Unilateral oculomotor 4 cases = 4.3%	Complete bilateral 12 cases = 13%	True nystagmus 1 case = 1.1%
Sluggish reaction 8 cases = 8.7%	Anisocoria 28 cases = 30.4%				
Double internal ophthalmoplegia 5 cases = 5.4%		Only one pupil irregular 3 cases = 3.3%	Unilateral abducens 2 cases = 2.2%	Partial bilateral 3 cases = 3.3%	Nystagmoid 2 cases = 2.2%
Unilateral internal and external oph- thalmoplegia 1 case = 1%	Mydriasis 4 cases = 4.3%				
One pupil A R and the other normal 2 cases = 2.2%	Normal size 33 cases = 36%	Normal shape 50 cases = 54.3%	Unilateral ptosis 1 case = 1.1%		
One pupil A R and the other int. ophth. 2 cases = 2.2%					
Normal reaction 4 cases = 4.3%					

#### THE PUPIL

**Reaction**—While the Argyll-Robertson pupillary phenomenon very rarely does occur in other conditions it is practically pathognomonic of tabes, its absence however does not altogether militate against the diagnosis, 76 per cent of my cases showed the phenomenon bilaterally and 4.5 per cent unilateral (Table I). Of 300

pupillary rigidity has been claimed to exist in tabes, more likely it is due to interstitial syphilis or intoxications. Absence of accommodation and the presence of light reaction has been observed in tabes (Djerme) but this is seen more often in general paresis, meningo vascular syphilis of the nervous system and tumors of the colliculi. "Springing mydriasis" that is alternating miosis and mydriasis occurs rarely in tabes and

is seen more often in paresis. The so-called paradoxical pupillary reaction has been observed in tabes and paresis (Mott), although its existence is doubted by some (Uhtoff). Piltz found contraction of the pupil on forcible contraction of orbicularis in 41-43 per cent of cases of tabes. Hippus is said to occur in tabes, but is neither common nor diagnostic, and has significance only in a rigid pupil. Its pathology is given as either cortical or quadrigeminal irritation (G Ludwig). Loss of reflex sensory dilatation is common and early in tabes.

All the foregoing pupillary signs are much less common in paresis. In my series of cases of paresis only 36.7 per cent showed an A-R pupil, 30 per cent gave a sluggish reaction and 20 per cent were normal in both eyes. One case, 3.3 per cent, showed bilateral and one, 3.3 per cent, unilateral internal ophthalmoplegia, while 67 per cent showed one pupil sluggish and the other normal (Table 2).

occurred in 30 per cent. Mydriasis occurred in 4.3 per cent of cases of tabes. I found normal-size pupils in 36 per cent of tabes and 60 per cent of paresis. In so-called cerebrospinal lues the miotic pupil does not especially belong to the clinical picture. Inequality is probably more common in paresis, but altogether is not of very great value. It is seen in neurotics and in diseases of the lungs, heart and chest. Obviously, unilateral involvement of the sympathetic, from whatever cause, will give inequality of the pupil.

**Shape**—An irregular pupil is probably as frequent in tabes as in paresis or general syphilitic involvement of the nervous system. In fact, it is said to be common in the very early stages of diffuse neuro-syphilis. However, one must make sure that an iritis is not behind the phenomenon or an old synechia. I observed irregular pupils in 39.1 per cent of tabes and 47 per cent of paresis. In 3.3 per cent of tabes and 13 per cent of paresis one pupil only was irregular and the

TABLE II—(30 CASES OF GENERAL PARALYSIS)  
SHOWING PER CENT INCIDENCE OF EYE SYMPTOMS

Pupillary Reaction	Size of Pupil	Shape of Pupil	Muscle Palsies	Optic Atrophy	Nystagmus
Argyll-Robertson 11 cases = 36.7%	Miosis 4 cases = 13%	Irregular 14 cases = 47%	Partial oculomotor 1 case = 3.3%	Total bilateral 1 case = 3.3%	Nystagmoid 1 case = 3.3%
Sluggish reaction 9 cases = 30%					
Bilateral int ophthalmoplegia 1 case = 3.3%	Anisocoria 9 cases = 30%	One irreg and one normal 4 cases = 13%		Partial bilateral (temporal) 1 case = 3.3%	
Unilateral int ophthalmoplegia 1 case = 3.3%					
One pupil sluggish and other normal 1 case = 3.3%	Normal size 18 cases = 60%	Normal shape 12 cases = 40%			
Normal reaction 6 cases = 20%					

**Size**—The miotic pupil is very common in tabes, but is only significant in connection with rigidity. One need but mention the arteriosclerotic pupil to show how common it is in other conditions. Miosis occurs in from 24 per cent (Uhtoff) to 52 per cent (Erb) of cases. In my series it was found in 32.6 per cent. There need be no parallelism between miosis and rigidity. The pathology is not quite clear. Some think it is due to a disturbance in the paths from the spinal center, others to an irritating process in the fibres to the sphincter pupillæ. (That it is a vagotonic reaction of an irritative character, as there is very good ground to believe from the general vagotonic reactions so commonly observed in tabes, one can, of course, only suggest.) Anisocoria is equally common and significant with miosis. It occurred in 30.4 of my cases of tabes. While in my series of cases of paresis miosis occurred in only 13 per cent, anisocoria

other normal, 54.3 per cent of tabes and 40 per cent of paresis showed normally shaped pupils. Besides irregularity in shape, the pupil may be oval or eccentrically situated. The explanation of the underlying pathology of pupillary irregularity is neither sufficient nor clear, though it is known that irritation of the long and short ciliary nerve fibres (Piltz) gives irregularity of outline.

**Pathology of Pupillary Reactions**—Some believe that the pathological process causing light rigidity lies in the gray substance of the third ventricle (Pineles, Siemerling and Bodeker, von Monakow). Marina found degeneration in the ciliary ganglion and secondary degeneration of the short ciliary nerves in all cases of pupillary rigidity. Uhtoff says that, although nothing is certain, the probability is that there occurs some break in the centripetal paths to the oculomotor and accommodation nuclei. Ferrier, in his "Lumleian Lectures Tabes," as quoted by Mott,

says "The probability is that the condition which blocks the path of reflex pupillary contraction blocks also that of psychio reflex dilatation." The conscious voluntary accommodation occurs by virtue of the central association with the muscles of convergence through the impulse from the cortex to the motoroculi. The Edinger-Westphal nucleus supplies the sphincter and the cilioparal supplies the dilator pupillae. The seat of the pathological process may be in the synapses in the ciliary ganglion or there may be an interruption in the reflex path to the Edinger-Westphal nucleus. The degeneration may be in the optic fibres (it is known that there are separate fibres for light reaction, some of which cross in the chiasm), or their terminal arborization in the superior colliculi or in the associating neurones from them to the Edinger-Westphal nucleus (Mott). The anatomico pathological background of the pupillary phenomena is still ill understood, as the existence of an accommodation center is only guessed at and not known.

A discussion of the histopathology will be deferred for later consideration in the general treatment of the pathology.

#### THE OPTIC NERVE

Perhaps not so important from the standpoint of diagnosis, but surely more so from that of pathology are the optic nerve changes in tabes and paresis. So called pure, white, simple optic atrophy is said to be the bridge of parenchymatous syphilis, and every case of optic atrophy is the forerunner of tabes, even if it takes 20 years (Charcot) to develop.

**Optic Atrophy**—Tabetic optic atrophy is more common in men. It is said to occur in 10 to 15 per cent of all cases of tabes. In my series of cases I found 133 per cent complete bilateral and 33 per cent partial bilateral atrophy that is, 166 per cent in all. It is more common in juvenile tabes. Wilbrand and Saenger collected 39 such cases from literature of which 19 had optic atrophy. Gowers mentions 26 cases of optic atrophy out of 400 cases of syphilis, i. e., 65 per cent. Mott states that paresis shows 4 per cent of optic atrophy. Some claim that one never finds that in pure cases of paresis, only in such as are complicated by tabes, i. e., tribo-paralyses. I found 33 per cent complete and 33 per cent partial bilateral optic atrophy in paresis or a total of 66 per cent.

Optic atrophy sets in most commonly in the preatrophic stage (50 per cent—Wilbrand and Saenger) and when it does occur usually, as is the first symptom. In fact such cases of tabes usually run a milder course. The so called *formes frustes* (Charcot) or *formes benignes* (Babinski) belong to this class. Some think that the advent of optic atrophy and blindness stops the progress of tabes (Benedict, Charcot, Gowers, Dejerine, Spiller, Mott), but other

authors disagree with this view (Marie). Careful serological examination ought to throw light on this point. Mott believes that tabetics who develop optic atrophy are apt to develop paresis but Oppenheim and Wilbrand and Saenger controvert this.

**Fields**—One eye usually precedes the other in loss of vision though the fact is often not discovered until the second is involved. Most authors assert that pure hemianopsia is never seen in tabes though symmetrical degeneration may simulate the picture, usually one finds the periphery of the other half also involved. Stargardt denies this dogmatic statement (v. 1). It is claimed that whenever in hemianopsia is found in tabes an interstitial lues involving the chiasm or tract complicates the picture. Central scotoma are rare in tabes and when found are the result of complications, such as interstitial syphilis, toxic amblyopia, etc. (Uhtoff). Stargardt quotes fourteen cases from the Breslau Clinic showing the presence of scotoma in tabes. Fuchs reported thirty cases of scotoma (quoted by Stargardt). Generally one finds (1) peripheral contraction of fields for colors, first for red then green blue and yellow and finally for white, and (2) cases which show partial defects of the field with other parts perfectly normal.

**Course**—The progress of the optic atrophy is usually slow and gradual. The visual disturbances usually begin with defects in color perception, defects in fields of vision and diminished central vision. At first there is blurring, cloudiness, flashes of light, seeing red and green. The patient may be unaware for a long time of his condition. One eye may precede by months the blindness in the other. In many cases vision is much better after the eye has been completely rested for hours in the dark, possibly because the few healthy retinal ganglion cells have a chance to renovate the visual purple. Sudden blindness in tabes is probably due to destruction of the maculopapillary bundle (Mott). It usually takes two to three years for complete blindness to set in. The minimum is said to be two to three months, the maximum twelve years (Uhtoff). Dejerine gives the time as six to eighteen months for completion of the optic atrophy. Tabetic optic atrophy "always ends in blindness" (Uhtoff). While this may have been true in the past there is reason to believe that it will not be so in the future.

**Ophthalmoscopic Findings**—The disk is grayish or whitish, the vessels are usually normal, the margins sharply outlined. There may be atrophy of the disk and no visual or field disturbances for some time but less often disturbances without ophthalmoscopic changes. Neuritic changes are not found in tabetic

atrophy, though they have been reported (Wilbrand, Oppenheim). The cupping of the disk is not a significant sign (Uhtoff). Nevertheless, there may be no disk changes, despite positive disturbances of vision and irregularities in fields. Wilbrand and Saenger quote ten cases (with autopsy) which showed no objective findings during life and yet revealed degeneration on microscopic study.

### EYE MUSCLES

It is difficult to determine the incidence of muscle palsies in tabes and paresis. Most tabetic eye muscle paralysis are fleeting and their existence is often brought out only through a history of double vision. Uhtoff speaks of 20 to 22 per cent of tabetics having disturbances of eye muscles, Erb gives 38 per cent, v Leyden and Goldscheider 40 to 50 per cent and Mott about 15 per cent. In my series of cases I found only 7.5 per cent, and if to this is added 7.6 per cent of complete internal ophthalmoplegia then the series shows 15.1 per cent. The oculomotor is most commonly involved (Erb, Fournier, Charcot, Gowers, Wilbrand and Saenger, Mott, Nonne), either partial or complete, thus earning for itself in tabes also the deserved appellation, *la signature de la verole*, given to it by Fournier and Ricord. The abducens is next most common and trochlearis last. As for the fourth nerve it may be remarked that detection of its involvement is particularly difficult and often escapes detection by the neurologist if not the ophthalmologist. Palsies are by far less common in paresis, in my series only 3.3 per cent. Kraepelin speaks of 18 per cent of transitory palsies.

*Clinically*, the palsies are partial, incomplete, fleeting and changing. Total third nerve paralysis is uncommon. Usually it is unilateral, if bilateral one thinks rather of a basal meningitic involvements. The levator palpebræ is the most common single muscle affected. Ptosis is more common in the early stages. In paresis ptosis is relatively uncommon compared to internal ophthalmoplegia (Wilbrand and Saenger), which is equally true of other eye muscle palsies in paresis. Incidentally, atrophy of the optic nerve with psychic symptoms, in tabes, is more common in connection with eye muscle palsies than without them. Isolated ptosis and abducens paralysis are said to be common. Complete external ophthalmoplegia alone is not common. Abducens paralysis is usually transient, rarely bilateral, always nuclear(?). Transient ptosis is not rare in early tabes. Palsies of associated movements are rarely, and according to Oppenheim, never seen in tabes. Diplopia, of course, is a common symptom. Most muscular palsies occur early in tabes (Charcot, Gowers, West-

phal, Wilbrand and Saenger, Uhtoff, Mott, Nonne) and are fleeting, those that remain stationary come later (Oppenheim). Recurring paralysis are not uncommon. The duration of the palsy may be from hours to days, months, or even years.

*Pathology*—All authors agree, and stained sections show, that we deal with a nuclear(?) degeneration. The roots are said to be secondarily degenerated, although the roots and nerve may be primarily degenerated (Dejerine). Spiller has demonstrated the presence of inflammation in the nerves in tabetic eye palsies. He found lymphocytic infiltration in the pia of the nerves. Thickening of the ependyma over the aqueduct and fourth ventricle without nuclear degenerations have been observed in tabetic muscular palsies. Microscopically, the ganglion cells are broken down in varying degrees, some cell bodies disappear, others are small and shrunken and with broken endings. Some cells show vacuolization. The fibres gradually disappear. There is an increase in neuroglia. Vascular changes are rare (v 1). In the nerve the myelin sheath is found broken down and axis cylinder very thin. Both may be completely atrophied. The connective tissue is increased and the nuclei are proliferated. (Despite which, Uhtoff says there is no proof of an actual neuritic process.) The transitoriness of the paralyzes is explained by some on circulatory grounds, while Wilbrand and Saenger are of the opinion that there is actual restitution of destroyed substance.

*Nystagmus*—Actual nystagmus is very rare in tabes and when found one should always suspect a complication. Nystagmoid movements are more common and supposedly are due to weakness of the eye muscles. I found 1+ per cent nystagmus and 2.2 per cent nystagmoid movements in tabes and 3.3 per cent in paresis. Mott gives 4 per cent in tabes. Charcot spoke of an ataxia of the eye muscles, but Uhtoff denies this. The anatomical seat of the lesion, if there be any, is not known.

*Keratitis and ophthalmia neuroparalytica* are very rare in tabes and according to Uhtoff and Wilbrand and Saenger almost never found. The same is true of herpes zoster ophthalmicus. Sensory changes in the region of the trigeminus are not common, nor are neuralgias. The pathology of keratitis neuroparalytica is a degeneration of the descending sensory root in the bulb, or the sensory nucleus and the nerve roots. Epiphora occurs but is rare in tabes, though it may come on in crises. This probably is due to irritation of the fifth and possibly the seventh. Paralysis of the branches of the sympathetic have been observed. All of the above symptoms are, of course, to be found more commonly in interstitial neurosyphilis.

## OPHTHALMOLOGIA

Isolated chronic progressive ophthalmoplegia is most commonly found in tabes and next often in paresis. Unlike muscular paralysis it is usually not recessive. Total ophthalmoplegia, that is internal and external, according to Uhthoff occurs in 2 per cent of cases, according to Wilbrand and Snenger in 7 per cent. I found unilateral internal ophthalmoplegia in 32 per cent of cases, bilateral internal ophthalmoplegia in 54 per cent and complete internal and external in 14 per cent in tabes, while in paresis I found 33 per cent unilateral and 33 per cent bilateral internal ophthalmoplegia. Optic atrophy accompanies the ophthalmoplegias in 30 per cent of cases. The very presence of primary optic atrophy occurring in ophthalmoplegia speaks for tabes or paresis. Papillary changes in shape and form frequently accompany ophthalmoplegia as do occasional facial and trigeminal paralysis. Very naturally accompanying bulbar symptoms speak rather against tabes and paresis and for diffuse neurosyphilis.

*Pathology*—Degenerative changes have been found in the nuclei and nerve roots supplying the eye muscles as well as the peripheral nerve branches. It is said that the degeneration begins in the nuclear regions or at least is more intense there than in the roots and nerves. Sometimes, however, the peripheral nerves alone are degenerated and not the nuclei (Oppenheim, Djerine, Spiller). The cells in the nuclei are shrunken, granular degenerated or vacuolated. The fibres are rare and the gliosis is increased. Small hemorrhages and discolorations of blood vessels have been found to account for the degenerations. Ependymal changes in the aqueduct and the floor of the fourth ventricle are rarely encountered. Peripherally the nerve fibres are found atrophied, the sheath and axis broken down. Lymphocytosis has been found in the nerves. The connective tissue may be increased. The muscles themselves show atrophy of fibres, degeneration, increase of nuclei and at times even hypertrophy of some fibres (Oppenheim).

A few eye symptoms are found in paresis which are never seen in tabes. In epileptic form seizures, so common in paresis, are occasionally seen conjugate deviation of the eyes. So, too, parietic migraine may be accompanied by transitory hemianopsia, transitory strabismus, ptosis and diplopia. And while it may be difficult to demonstrate a parietic lesion of the calcarine fissure, occipital lobe or optic radiation may give homonymous hemianopsia. Alexia may result from a lesion in the angular gyrus. These symptoms may occur in groups of those regions and indeed the difficulty of diagnosis may be very great.

The symptoms accompanying parenchymatous neurosyphilis are contrasted with those occurring in interstitial neurosyphilis will, however, serve to help in the differentiation. Visual hallucinations may be mentioned as occurring in paresis and, rarely, even in tabes and taboparesis.

## DIAGNOSIS

In attempting to differentiate tabetic eye symptoms from other conditions one usually considers meningo-vascular neurosyphilis (C-S Lues), pseudotabes alcoholic, combined sclerosis of and posterior and lateral columns hereditary ataxia and syringomyelia. Leaving out those of lesser importance I shall limit the differential diagnosis to tabes and so-called cerebrospinal syphilis.

Although rare, tabes may supervene on an interstitial, vascular neurosyphilis and then we have a mixed clinical picture so far as the eye symptoms are concerned, making the diagnosis somewhat more difficult. In such cases the general neurological signs particularly those referable to the cord will have to be taken into consideration. Generally speaking, the clinical picture of tabes comes on late in the infection, eight to fifteen years interstitial lues more commonly early in the disease—one to three years. In tabes optic atrophy is more common and the condition usually progresses to complete blindness. Total bilateral optic atrophy almost never appears in interstitial vascular neurosyphilis (Uhthoff, Mott, Wilbrand and Snenger). In the latter we always deal with an active retrobulbar inflammatory neurotic process causing so-called descending optic atrophy.

The visual fields in tabes differ from those found in optic neuritis. Central scotoma due to direct involvement of the maculopapillary bundle are very common in neuritis, and so is hemianopsia while irregular or concentrically contracted fields are the rule in tabes. Bitemporal hemianopsia does not at all belong to the picture of tabes. Optic neuritis is not infrequently unilateral throughout the course of interstitial neurosyphilis. Ophthalmoscopically one often finds vascular changes and an inflammatory condition of the disk in neuritis and a sharply defined margin and normal vessels in tabes. Of course a syphilitic meningitis in back of the chiasm (optic tracts etc.) will not give any inflammatory disk changes even in neuritis. Visual disturbances without ophthalmoscopic findings are not uncommon in cerebrospinal lues and are exceptional in tabes. Isolated optic neuritis without complications is rare in interstitial syphilis while optic atrophy alone even for years is not uncommon in tabes. Complications of the basal

cranial nerves and other localized affections point away from tabes. Choking of the disk caused by a gumma, obviously, is never encountered in tabes.

Paralyses of the eye muscles are said to be far less common in tabes, and involvement of the other cranials is practically unknown. It is difficult to determine the exact incidence as patients often give a history of diplopia and show no palsies. Not only are disturbances of eye movements less common but they are not so complete, they are transient and fleeting, they show nuclear(?) paralyses, isolated palsies. As we deal with a basilar vascular meningitis in interstitial neurosyphilis we often have double paralyses of the third nerve, involvement of all the branches, greater degree of paralysis and combination with visual disturbances not peculiar to tabes. A superior crossed hemiplegia (Weber's syndrome), symptoms referable to gummatous or other involvement of the brain, of course, do not belong to tabes.

Miosis is rare in cerebrospinal syphilis and pupillary rigidity, that is a true Argyll-Robertson phenomenon, is said not to occur except in tabes and paresis. Where the A-R is found one is justified in suspecting a superadded tabes. Accommodation is usually affected together with light rigidity in interstitial lues. The internal ophthalmoplegia not infrequently is accompanied by involvement of other cranials. Involvement of the trigeminal is very rare in tabes and keratitis neuropathologica is altogether wanting. Horner's pupillary sign is never seen in tabes. Wernicke's sign is unknown in tabes, as are symptoms referable to involvement of the colliculi or geniculate bodies.

Practically the same conditions hold true in paresis as in tabes. The cerebral conditions caused by gumma giving psychic symptoms, which may remind one of paresis, will be diagnostically differentiated by signs and symptoms peculiar to each condition. Ataxia, of course, is not seen in interstitial neurosyphilis and spastic paralysis is not observed in tabes, while the loss of memory, gutting of the personality and euphoria are not seen in either. Finally, serology offers an aid to diagnosis which is always available. The blood is more often positive and the cerebrospinal fluid more often negative in interstitial syphilis than in tabes, while in paresis the fluid is nearly 100 per cent positive. A colloidal gold reaction, of course, goes with paresis and speaks against interstitial neurosyphilis. All in all, while cases occasionally do come up which offer diagnostic problems, in the vast majority careful analysis will make the differentiation fairly simple.

## PATHOLOGY

Before discussing the more recent conceptions of the syphilitic changes in tabetic and parietic optic atrophy it may be well to review briefly the orthodox pathology. Microscopically the nerve appears gray, thin and slack, on cross section the periphery may be gray and the center of the nerve white. Microscopically there is fatty degeneration and absorption of the myelin sheath, breaking down, varicosity and disappearance of the axis cylinder. The atrophic process begins primarily in the retinal ganglion cells and in the retinal fibres and progresses secondarily, but little, to the optic, chiasm, tract, thalamus, superior quadrigeminal and external geniculate body. It never begins in the basal ganglia to descend to tract, chiasm, optic, etc., although Uthoff thinks it may begin in the optic fibres. The changes are similar to those found in the posterior columns of the cord. The connective tissue and neuroglia tissue changes are secondary to the fibre changes and not due to sympathetic or vascular changes. The interstitial connective tissue and neuroglia undergo secondary changes, but there is no scar formation and proliferation or infiltration of cells as in neuritis. There is atrophic sclerosis of glial and interstitial tissue and sclerosis of the small vessels. Later there is an increase of glial cells. In old cases there is atrophic sclerosis of the retinal vessels. The neuroglial increase is secondary to the atrophy of the nerve fibres (Weigert). The theory has been put forward (Wharton Jones) that the tabetic optic atrophy is due to the influence of the sympathetic which is affected in the spinal cord, but it has been denied on the ground of the absence of vascular changes. In paresis the central neurones are degenerated and in tabes the peripheral ones.

From the abbreviated description just given we gather that in tabes and paresis, more particularly in optic atrophy, the process is a purely degenerative one, the existence of which is postulated on the theory of toxins. The presence of an inflammatory process is not considered and is even denied.

As far as the toxin theory is concerned it seems to have been fairly well disposed of by the discovery of spirochetes in tabetic and parietic lesions, and, while they have not yet been demonstrated, it is not too speculative to assume their existence in the optic paths as well. Further, as has been fairly well established, exudative foci are found in tabes and paresis and the pathological process is not at all like that found in toxins such as tobacco, methyl alcohol, filix mass, etc.

In 1902 Kéraval and Raviart examined microscopically a number of atrophied nerves taken from tabetics and parietics and found neuritic processes. They found an endo and parivascu-

this is the cause of the atrophy, likewise a thickening of the pia-arachnoid around the optic paths. In 1905 Marie and Leri also found signs of inflammation and thickening of the pia and arachnoid covering the optics and chiasm. They described signs of obliterated vessels in the septa of the nerves and stated that there are two phases in optic atrophy. First, the inflammatory phase *phase d'inflammation*, and second *phase d'obliteration*. It is in the second stage that the fibres disappear. Marie and Leri also found a disproportion between the atrophy of the retinal ganglion cells and the optic fibres, a condition which ought never to exist if it is true that the degenerative process in the latter always follows a disappearance of the former. They concluded therefore, that destruction of the optic fibres may go on independently of the destruction of the retinal ganglion cells.

It was, however, Stargardt who seems to have demonstrated conclusively the exudative, inflammatory process in tabetic and parietic optic atrophy. He examined twenty-four specimens taken from tabetics and parietics and investigated separately the retina, optic nerves, chiasm and tract, external geniculate body and parts of the gray matter adjacent to those structures. To make sure that no cadaveric changes interfered with his investigations, he obtained some of his specimens within a few minutes after death.

**I The Retina**—His investigations showed chromatolysis and degeneration of the ganglion cells, which could only have been secondary to degeneration in the optic paths. In many cases of paresis where the optic fibres were found normal the retinal ganglion cells, too, were found intact. On the other hand he found normal retina in cases where the brain suffered intensely and he asks the question "If the degeneration of the ganglion cells is due to a toxin, how is it that they altogether escaped destruction when the brain suffered so extensively?" In four cases where the ganglion cells were degenerated in part it corresponded to degeneration of the optic fibres. He also found quadruplet degeneration in the retinal cells and he asks "How can this be explained on the assumption that the process begins in the retina?"

**II Changes in the Optic Nerves**—Stargardt found two pathological processes in tabes and paresis exudative and degenerative. Characteristic of the first was the presence of lymphocytes and plasma cells but no round cell infiltration. Characteristic of the second was the breaking down of the axis cylinder and myelin sheath and replacement by glial tissue. The exudative and degenerative processes were found side by side. The plasma cells were found mainly in the pia and septa along the perivascular lymph space in the optic nerve. There was also inflammation of the endothelium and proliferation of vessels. In some cases mast cells were to be seen.

**III Changes in the Chiasm and Tract**—In the chiasm primary degeneration was most commonly seen. By primary degeneration is meant the presence side by side of both exudative and degenerative processes, by secondary is meant the absence of an exudative process. In the optic tract the changes were usually secondary and only rarely were exudative ones seen.

**IV Changes in External Geniculate Body**—In some were found exudative processes in the pia with deposit of plasma cells and secondary degeneration in the ganglion cells. Similar pathological changes were found in the tuber cinereum and the gray matter of the anterior perforated space, third ventricle, basal part of the cortex, the olfactory and oculomotor nerves and the hypophysis—all structures adjacent to the intracranial visual paths. As to the oculomotor, both exudative and degenerative changes were found and in several cases of ptosis no changes were found in the third nerve nuclei. In all cases the plasma cell infiltration was in the vessels of the nerve and in the mesodermal tissue, always having stopped short of the ectodermal structures (i. e., the nerve fibres).

His conclusions were as follows: "1 There is no fibre degeneration if there is not an exudative process somewhere in the course of the nerve. The exudative process, according to this belongs to the picture of optic nerve atrophy, just as it does to that of tabes and paresis. 2 The main seat of the exudative process is in the intracranial portion of the optic nerve, in that lying in the bony canal, and in the optic chiasm. The orbital parts of the tract and external geniculate body are only rarely involved. 3 There is no regularity in the localization or extent of the exudative process. 4 In paresis the exudative process extends from the brain structures to the visual paths in tabes the exudative process begins in the visual paths apart from those in the spinal cord and may extend to the brain. Here, too, there may be all possible variations. In all cases the exudative process precedes the degenerative changes."

Stargardt is also of the opinion that there is a nongonorrheal syphilitic process in cases of tabes and paresis which is comparable to gummatous changes seen in interstitial syphilis, and that the histological changes in the former take place by preference in the optic nerve and chiasm and more rarely in the tract etc., just as they do in the latter. He denies that no scotoma are found in tabes quoting Fuchs (1885), and that no hemianopsia is seen quoting Gowers. Both of these pictures may follow, though rarely, the primary exudative-degenerative process in the retrolubular optic paths.

Schoenberg who has done some interesting work on intravital staining of the optic nerve, is also of the opinion "that this type of optic atrophies is due to the presence of spirochetes

in the sheaths and in the interior of the optic nerves, that in the beginning these micro-organisms are localized at the periphery of the nerves, mostly in its sheaths, and that only in a later stage (do) they migrate into the nerve bundles and between the fibres. In a later essay on the intracranial treatment of optic atrophy the same author confirmed his previous view that the tabetic optic atrophy is the result of an active inflammatory process, and he has even succeeded in arresting, if not improving, the condition in advanced cases.

Spiller has made microscopic studies in tabetic eye palsies and has demonstrated the presence of inflammatory changes. In one case showing bilateral internal and external ophthalmoplegia he found lymphocytic infiltration of the oculomotor nerve and nuclei, as well as of the trochlearis and abducens. The nerves were atrophied and the fibres degenerated. The degeneration in the left abducens was greater than in the right and the lymphocytic infiltration was also more extensive in the left than in the right. Although the case was clinically one of tabes, pathologically it could not be differentiated from cerebrospinal syphilis.

Spiller also found lymphocytic infiltration in the pia and the pial vessels in eleven cases of tabes. Dejerine has described actual meningitis in tabes, while others have observed inflammatory changes in the septa and the interstitial supporting tissues. Still others have shown the presence of lymphocytes and plasma cells in the lymph sheaths in cases of tabes and paresis. Bresowsky (as quoted by Spiller) found meningitis in forty cases of tabes. In half of those cases the meningitic process was of a severe form.

Warthin, as the result of intensive study of 300 cases of syphilis by means of microscopic sections, definitely states that it is the gummatous process that is rare and that actual inflammatory lesions exist where none are seen in ordinary search. Doing post-mortems with the microscope instead of the scalpel he demonstrated the presence of spirochetes in places where there were no inflammatory lesions, but simple degeneration or necrosis—a condition analogous to so-called primary degeneration of the optic paths. It is his opinion that all nerve syphilis (and optic atrophy is nerve syphilis) begins in the secondary stage and that "every syphilitic is a little tabetic and paretic."

Fordyce, in speaking of optic atrophy, says that "in syphilis the optic nerve may be primarily or secondarily involved, more often the latter," that is, there may be direct involvement of the nerve or extension to it from the meninges. Further, he is of the opinion that optic atrophy, in tabes, which gives a positive fluid reaction bespeaks an inflammatory process, and therefore makes the case amenable to treatment.

## CONCLUSION

From the study of the more recent investigations of the pathology of neurosyphilis, particularly with reference to optic changes, the writer has gained the impression that there is no fundamental difference between tabetic neurosyphilis and so-called cerebrospinal or, better, diffuse neurosyphilis. It seems evident that an inflammatory process is behind every form of syphilitic involvement and that the spirochete is at the bottom of the reaction. Obviously, the inflammatory reaction is in direct proportion to the kind of tissue involved. There is every reason why the meninges should respond more violently than the parenchyma of the brain. The reaction, too, of vascular, interstitial structures will be of a different nature than that of parenchymatous tissue. But lymph and plasma cell infiltration and mast cells are the fundamental characteristics of syphilis. This picture occurs in tabes, paresis and optic atrophy, just as it does in interstitial neurosyphilis or, say, aortitis. There is, therefore, no valid reason for calling a protean clinical picture cerebrospinal syphilis. In the first place, tabes and paresis are anatomically just as cerebral and spinal, and secondly, the pathology is based in all cases on a similar reaction to the same agent. I have, therefore, without being to consistent, used the term interstitial, or diffuse neurosyphilis, instead of cerebrospinal lues.

The same argument, it seems, holds true when we come to the pathology of special structures, such as the optic nerve. Evidently very careful examination has revealed inflammatory reactions, even in very old cases of optic atrophy. It would seem advisable therefore to drop the term primary optic atrophy or, rather, employ it in the sense that the atrophy takes place *pari passu* with the inflammatory, exudative process. It is equally descending with an inflammatory neuritis, though the vascular changes are not nearly so violent. The deductions to be drawn are quite obvious. Without attempting to deal with the subject of therapy it may be well to point out that if the inflammatory character of optic atrophy will come to be recognized, we may be able to attempt rational and possibly hopeful treatment in cases which have hitherto been the despair of therapeutics.

## LITERATURE

- 1 Keraval and Raviart *Arch de Neur*, 1902, XVI
- 2 Marie and Leri *Nouvelle Iconographie de la Salpêtrière*
- 3 Stargardt Ueber die Ursachen des Sehnervenschwundes bei der Tabes und der Progressiven Paralyse *Arch f Psychiatrie*, 1913
- 4 Spiller, Wm G. The Pathology of Tabetic Palsy with Remarks on the Relation of Syphilis to the So-called Parasyphilitic Diseases *Jour Nerv and Ment Diseases*, Vol XLII, 1915

- 5 Wilbrand and Saenger Neurologie des Auges
- 6 Uhloff W Graefte Saemisch Handbuch der Gesamten Augenheilkunde 2 Aufl
- 7 Head H Brain 1914
- 8 Mott F W Syphilis of the Nervous System
- 9 Arce Powers A System of Syphilis
- 9 Nonne, Max Syphilis und Nervensystem 1909
- 10 Schoenberg M J Intracranial Treatment of Syphilis and Parasyphil Optic Nerve Affections Jour Amer Med Assn June, 1916 Vol LXVI
- 11 Schoenberg M J Remarks on Intracranial Treatment of Syphilis of the Optic Pathways and Optic Atrophy N Y State Med Jour Feb 1918 Vol LVIII No 2
- 12 Warthin A S Harvey Lecture Acad of Med N Y Dec 12 1917
- 13 Spiller W G The Amoebic Form of Tubercles Arrested by Blindness Phila Med Jour Nov 1902
- 14 Piltz Ueber neue Pupilerkrankungen Neurol Centralblatt 1899, No 6
- 15 Siemering E Beitrag zur Path Anat der isohäretie etc Augenmuskellähmung Arch f Psych 1905 XL No 1
- 16 Dejerine J Semilogie des Affections du Système Nerveux
- 17 Oppenheim H Lehrbuch der Neurologie heiten
- 18 Gowers Syphilis and the Nervous System Lettoman Lectures
- 19 Fournier Les Affections Syphilitiques 1894
- 20 Babinski and Nageotte Lesions Syphilitiques des Centres Nerveux etc Nouvelle Iconogr de la Salpêtrière 1902 No 6
- 21 Elschnig E Zur Anatomie des Sehnerventrophie bei Erkrankungen des Centralnervensystems Wiener Klin Wochens 1899 No 11
- 22 Spiller W G and Camp D C The Clinical Resemblance of Cerebrospinal Lues to Disseminated Sclerosis Amer Jour Med Sci CXXXIII 1907
- 23 Patrick Hugh F The Somatic Signs of Brain Syphilis Jour A M A XXXVII 1901
- 24 Southard E C and Solomon H C Neurosyphilis Boston 1917

## NOTES ON THE EPIDEMIOLOGY OF CONTAGIOUS DISEASES OF THE EYE\*

By MARTIN COHEN, M.D.,  
and  
HIDEYO NOGUCHI, M.D

THE etiology of acute and chronic inflammations of the conjunctiva is of great importance in the present war crisis, for such knowledge enables one to recognize the sources of infection and guard against epidemics. A definite diagnosis should therefore be made in the early stages of these diseases so that measures for isolation may be made without delay.

Contagious affections of the conjunctiva are classified clinically into two main types—acute and chronic. To these may be added a third type—the mixed infection. The bacteriological studies upon which these notes are based have

been conducted by Dr Noguchi for the past eight years.

The majority of inflammations of the conjunctiva are bacterial in origin, though infections occur at times in which the secretions are apparently sterile, microorganisms being absent alike in film preparations and cultures. In chronic inflammations of the conjunctiva, which comprise chiefly the three maladies, trachoma, follicular conjunctivitis and cell inclusion conjunctivitis the diagnosis is made by the changes manifested in the conjunctival mucosa—namely, follicles, papillae, hypertrophy, or cicatrization. No organic origin has as yet been accepted as the causative factor. While the normal conjunctiva is usually inhibited by non pathogenic organisms, during epidemics of eye infections special pathogenic germs are demonstrable on the apparently normal mucosa, and at such periods any individual can become a carrier by having his conjunctival secretions come in contact with other conjunctivae through the agency of gloves, towels, fingers etc. Contagious diseases of the eye are generally binocular, although at the onset only one eye may be affected.

The bacteriological diagnosis of infectious eye diseases is practically impossible from the clinical appearances alone, hence early bacteriological examinations especially with the aid of cultures, are indicated during epidemics for the purpose of diagnosis, prognosis, and treatment. Such examinations are also necessary in order to establish a scientific bacteriological nomenclature and for the publication of reports of the epidemic in question.

In institutions, epidemics of the acute type are mostly prevalent during the spring and summer months. It is believed that the weather and dust act as predisposing factors. Once under way, the contagion spreads rapidly among groups of individuals who come in daily contact with each other. Recurrences of acute infections are in frequent.

Acute inflammations may be mild, moderate, or severe in type depending upon the virulence of the infection. Epidemic eye infections are usually more severe than the ordinary endemic type. The character of the secretions may be serous, mucoid, purulent, fibrinous, or membranous. The pathogenic organisms that have thus far been isolated in acute and chronic inflammations are the following: pneumococcus, Koch-Weeks bacillus, influenza bacillus, gonococcus, Klebs-Löffler bacillus, inclusion cells and the Morax-Axenfeld bacillus.

The identification of a number of similar organisms or even a few of some virulent type in film preparations during the early period of inflammations is sufficient for a bacteriological diagnosis. During epidemics mixed infections are not uncommon. These prolong the original

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 2, 1918.

disease and complicate the clinical picture. We shall now consider, briefly, various contagious eye diseases, as I have observed them in institutional practice covering a period of ten years.

In acute inflammation due to the *pneumococcus*, which affection is communicable, the symptoms are usually of a varied type, depending on its virulence. This condition presents a diffuse congestion of the entire conjunctiva, with a serous or muco-purulent secretion, edema of the lids, and hemorrhages in the conjunctiva. It lasts from one to three weeks and very rarely involves the cornea. Bacteriological examination of the secretions is essential in order to differentiate a pneumococcal from a Koch-Weeks infection. We have recently observed numerous cases of severe pneumococcal infections of the conjunctiva in hospitals and clinics. During the past ten years epidemics of pneumococcal or Koch-Weeks infections have been variable.

The incubation period of acute inflammations of Koch-Weeks or of influenzal origin is from two to four days. This type presents an intense conjunctival congestion with serous or muco-purulent secretion, at times, isolated conjunctival hemorrhages, chemosis of the bulbar conjunctiva, and occasionally pustules are seen. There is a moderate inflammatory edema of the eyelids, the lid margins are covered with secretion, and moderate pain is sometimes present. These pathologic changes have been associated with an inclusion-cell conjunctivitis, as reported previously (Archives of Ophthalmology, Vol xlv, No 2, 1916). The tendency of these inflammations is toward complete recovery. The epidemic under study lasted from one to four weeks.

*Epidemic gonorrheal conjunctivitis*, as heretofore reported, is a highly communicable affection, the incubation period being from one to three days, the onset is usually violent. There are present marked edema of the lids, profuse purulent discharge, chemosis of the bulbar conjunctiva, and a diffuse congestion. At this stage, the cornea may present a superficial infiltration and later other serious complications. During the terminal period, the condition closely simulates trachoma on account of a papillary hyperplasia. In some very acute cases, the tarsal conjunctiva may be covered with a pseudo-membrane. The sub-acute stage of the disease may persist for two to four months. At the end of this period the conjunctiva again assumes its normal state. In order that the dreaded infection may be arrested and the sound eye be properly protected, the cause of this affection should be recognized early. In typical cases the gonococcus was present in pure culture. A mixed infection with inclusion-cell conjunctivitis was seen in an epidemic, as reported (Archives of Ophthalmology, Vol xl No 1, 1911). The specific micro-organisms were found in the secretions and in the conjunctival epithelium.

*Inclusion-cell conjunctivitis* is a disease with a distinct pathologic entity and a pronounced clinical picture. It is communicable, the inclusion-cells being chiefly seen in film preparations made from secretions in the early stage. The cells may be recognized as coarse coccoïd bodies, stained bluish in Geimsa's solution. Noguchi has isolated an organism that closely resembles the inclusion-cells, but its pathogenesis could not be established. These bodies are found mainly in the cytoplasm of the conjunctival epithelial cells, as previously described (Archives of Ophthalmology, Vol xl, No 1, 1911).

The incubation period is two to four days. The disease is regarded by Dr. Noguchi and the writer as a contagious affection. At the onset there are acute symptoms which simulate a Koch-Weeks or pneumococcal infection, but the condition differs in that it is accompanied by medium-sized follicles found in the upper and lower folds, and is associated with a moderate edema of the lids. After several days, the upper tarsal conjunctiva exhibits also a diffuse, finely granular or papillary appearance having a brick-red color. Altogether this appearance is characteristic of the disease when fully developed.

After a few months, this picture is followed by a slow retrogression of the process, usually starting from the upper tarsal conjunctiva, which, after an interval varying from three months to a year, is followed by a normal condition of the conjunctiva.

Of seventy-five cases of inclusion-cell conjunctivitis under my observation for the past eight years, the end result has invariably been a complete restoration of the conjunctiva. In this respect this disease differs from trachoma, which terminates in cicatrization.

Inclusion-cells are observed in film preparations in trachoma, and, in fact, in nearly all contagious affections of the eye. We have found inclusion-cell conjunctivitis present in the newborn a few days after birth, but were unable to trace its cause either to the mother or to any other source. The conjunctival secretions in these cases have produced inclusion-cell conjunctivitis when inoculated into conjunctivæ of animals.

*Follicular conjunctivitis* is a mildly contagious disease characterized by raised follicles. The incubation period is from one to two weeks. It usually occurs in children who are confined in close quarters, under poor hygienic and poor nutritional conditions. The isolated follicles may vary in number, size, and location, depending on the severity and stage of the process.

The disease begins with follicles, appearing first in the lower folds and later spreading to the upper folds whence they sometimes extend to the upper tarsal conjunctiva. The follicles sometimes coalesce, forming large lymphoid masses.

There is no hyperplasia of the papillae or conjunctiva.

In mild-cases, the follicular contents are absorbed in the course of a few months without treatment. In the severe form, the disease may persist for years, but the conjunctiva usually becomes normal in both conditions, regardless of treatment. In addition to the follicular conjunctivitis, there is frequently present an infection which is liable to lead to mistaken diagnoses, particularly in cases of inclusion cell conjunctivitis. A bacteriological study of these cases would aid in recognizing the complicating infection. A simple follicular conjunctivitis has no clinical resemblance to trachoma or any other conjunctival disease.

*Diphtheritic conjunctivitis* is a communicable disease, accompanied by a purulent discharge, thickened lids, and a diphtheritic membrane located usually on the tarsal conjunctiva. This condition is rare, occurring mainly in children suffering from nasal or pharyngeal diphtheria. A frequent complication is sloughing of the cornea. The Klebs-Loeffler bacillus is usually the bacteriological factor. We have never seen an epidemic of this affection.

*Diplo-bacillary conjunctivitis* is a blepharoconjunctivitis which is frequently localized at the internal or external angle. It is mildly contagious by reason of the presence of the Morax-Axenfeld bacillus. No epidemic of this affection has come under our observation.

*Trachoma* is a communicable disease and by reason of its sequelae, is a grave affection. It is of unknown causation and is primarily a disease of the conjunctiva, the cornea being secondarily involved. Most ophthalmologists agree that it terminates in cicatrization, sometimes in secondary deformities of the eyelids, and in pannus.

Cases in which the conjunctiva undergoes a complete restoration without cicatrization are not considered to be trachoma. Some conditions of the conjunctiva simulate trachoma, but as a rule they can be clinically differentiated. They are inclusion cell conjunctivitis, mixed infections occurring in chronic conjunctival inflammations, pemphigus, vernal catarrh and such cases of follicular conjunctivitis as show scars or a pannus as the result of operations.

A delay in the diagnosis and treatment of trachoma until the cicatricial stage is reached threatens social and economic consequences to the patient and community. On account of the susceptibility of the conjunctiva to superadded infections the condition is liable to be associated during epidemics with catarrhal infections, a bacteriological differentiation can generally be made.

Trachoma is generally binocular affecting persons living under unsanitary conditions. Frequently there may be a single victim in a large

family who has a typical form of the disease, while other members have escaped without taking protective measures. When the secretions of a trachomatous eye though devoid of inclusion-cells are inoculated into the conjunctiva of monkeys, in inclusion-cell conjunctivitis usually results, with the finding of typical inclusion cells. In the monkey this conjunctivitis finally resorbs and leaves the conjunctiva normal. The apparent absence of inclusion cells in trachoma is probably due to their scarcity and the consequent difficulty of identification. When the secretions containing these cells are inoculated on suitable tissue they at once proliferate and produce inclusion cell conjunctivitis. Such cases of trachoma, complicated by inclusion cell conjunctivitis transmit the latter disease solely. Inasmuch as inclusion-cells are found in all stages of trachoma the question arises as to the relationship of the two diseases. At times a clinical differentiation is practically impossible.

During the last eight years, I have had the opportunity of observing seven cases of trachoma from the incipient stage to that of cicatrization. These cases varied slightly in their clinical manifestation, depending upon the virulence of the infection and the presence of complicating inflammation. Of these cases, four were of eight years' duration, and three of three years' duration. All patients now present distinct evidences of cicatrization of the conjunctiva, besides this three of the cases show partial monocular ptosis of three years' standing and one case, partial binocular ptosis for eight years. In a few of the cases the apparent ptosis was due to an accompanying keratitis.

Marked binocular pannus also occurred in four patients during the cicatricial or atrophic stage, in the hypertrophic stage of two cases marked monocular pannus has been present for the past six months. One case after eight years simply shows a diffuse thinning or cicatrization of the entire palpebral conjunctiva of both eyes. He never presented any marked symptoms or complaints of his protracted disease. No other sequelae have occurred in these cases—such as entropion, trichiasis symblepharon or xerosis, these results in trachoma probably requiring a longer period for their development.

The bacteriological findings in these seven cases are as follows:

Four cases showed inclusion cells in the incipient stage only. One case developed an inclusion cell conjunctivitis five years ago. After recovery he developed a mixed infection of inclusion cell and Koch-Weeks conjunctivitis. He recovered from this infection, remaining normal for eight months, and then a pneumococcus conjunctivitis appeared from which also he recovered however eight months later there gradually developed all the clinical symptoms of trachoma.

Two cases had a mixed infection of inclusion-cell and gonococcal conjunctivitis, lasting for six months. In one case the conjunctiva became normal after four months, in the other after eight months, both continuing normal for a year and a half, but for the past three years both have slowly developed all the symptoms of trachoma.

From these bacteriological findings, we conclude that it is impossible to establish definitely any cause for trachoma, therefore for an accurate diagnosis it is indispensable to have a knowledge of the clinical manifestations throughout the entire course of this protracted disease.

The clinical course of these seven trachoma-cases was as follows. In the incipient stage, the appearance was that of a mild acute catarrhal conjunctivitis, which lasted a few days and was associated with follicles in the transitional folds, simulating follicular conjunctivitis. After a few days, discrete papillæ appeared on the upper tarsal conjunctiva, these papillæ became gradually more distinct and prominent, simulating clinically an inclusion-cell conjunctivitis. A bacteriological examination of the conjunctival secretions at this period showed no inclusion-cells. The papillæ were larger, flatter, and they persisted longer in the conjunctiva than in an inclusion-cell conjunctivitis. When the papillæ and follicles attained a certain development, some coalesced with neighboring papillæ or follicles, resulting after months or years in a diffuse hypertrophic or thickened condition of the conjunctiva, devoid of visible blood vessels. Pannus or ptosis, or both, are present during this stage in some cases. This process is gradually replaced by the encroachment of irregular strands of connective tissue in the mucosa, forming in places islands of the mucous membrane which are best seen with a condensing lens in daylight. This invasion of proliferating connective tissue results after a year or more in a diffuse cicatrization or thinning of the conjunctival mucosa and tarsus. In this stage the tarsal conjunctiva appears to be devoid of blood vessels, and in all or part of its surface it has a violaceous color. In some cases pannus and ptosis have also existed in this stage.

Although the cicatricial stage of trachoma continues indefinitely and apparently is devoid of acute manifestations, nevertheless the secretions from the conjunctiva are capable of producing an inclusion-cell conjunctivitis. Such a phenomenon, however, only emphasizes the fact that these secretions can harbor organisms which, though few in number, act as carriers of infection. Once trachoma probably always trachoma, since recurrences are frequent in the cicatricial stage.

As compared with other contagious eye infections in institutions and clinics trachoma cases

are in the minority. Where isolation has obtained, the affection has not spread. The communicability of infection from trachoma cases may be due to the complicating infection of inclusion-cells, Koch-Weeks bacilli, pneumococci, gonococci, or other bacteria, it having been observed that these organisms can produce various forms of acute or chronic contagious inflammation of the conjunctiva.

The facts previously enumerated, and my personal observations of contagious eye affections occurring in New York City, lead me to believe that typical trachoma is not so widely spread nor so readily communicable in this city. This fact may be due to the absence of the continuous irritating effect upon the conjunctiva of such predisposing factors as wind, dust, sand, combined with the intense rays of the sun present in other localities. These factors sensitize the conjunctiva and thereby possibly allow an unknown specific virus to penetrate it, which virus under certain unknown circumstances produces a proliferation of the connective tissue that is an essential element in trachoma.

It seems probable, then, that the cause of trachoma is one or the other of the following factors: a specific virus, as yet not identified, invades the mucous membrane of the conjunctiva there stimulating a proliferation of the connective tissue, or the specific unknown virus destroys the mucous membrane of the conjunctiva, thus furnishing a favorable soil for such bacteria as Koch-Weeks, pneumococci, gonococci, inclusion-cells, or others to permeate the deeper layers of the conjunctiva and give rise to a proliferation of the connective tissue.

To account for the difference in the virulence, and the fact that some conjunctivæ are immune when contagion is possible, we must assume that the personal resistance of the individual is a relevant element.

The treatment of epidemic eye disease embraces the following considerations: (a) the prevalent contagion, (b) proper prophylactic measures, of which isolation is chief, (c) proper safeguards for the protection of nurse, attendant, or other persons exposed to the disease. Strict asepsis and the use of protective glasses are the most effective in carrying out this last requirement. All articles which have come in contact with the affected eyes should be placed in paper bags and then burned.

The local treatment of acute inflammations comprises frequent, copious, and gentle irrigation of the eye, with lukewarm saturated boric acid solution at least every hour, and sometimes oftener, using an undine. During irrigation, the patient usually reclines and the eyes are irrigated alternately. This treatment aims at keeping the conjunctival sac completely free from infectious matter and preventing accumulation of discharge.

There is no method of sterilizing the conjunctiva which will not endanger the cornea and conjunctiva. The Carrel-Dakin solution is now being tested. Early in the disease applications of a one per cent silver nitrate solution should be made daily with a cotton applicator to the lower conjunctiva for about a week, after which the irrigation should be continued until improvement is evident. In corneal involvement, hot compresses are applied as often as necessary, and a one per cent atropine solution is instilled into the eye two or three times a day in order to prevent iritis or iris prolapse.

Conjunctivae which secrete freely are never bandaged, as is universally known. The lid margins of each eye should be separately mopped with moistened cotton swabs as frequently as may be necessary, and this treatment is followed by the usual irrigations. In gonococcal inflammations of the conjunctiva, the tendency of the cocci to attack healthy epithelium must be borne in mind lest corneal involvement ensue. When inflammatory edema of the lid is markedly present, ice compresses are applied to the lid intermittently for the first twenty-four hours and copious irrigation with daily applications of one per cent silver nitrate for a limited period, is performed at frequent intervals. If the cornea be involved atropine should be used.

In addition to proper local treatment *diphtheritic conjunctivitis* is combated with antitoxin applied locally as well as used hypodermically. In *diplo-bacillary conjunctivitis*, cotton pledgets saturated with olive oil are used to cleanse the lid, zinc sulphate (one half per cent) ointment is applied to the conjunctiva and lid margins twice daily until improvement is noted.

In the treatment of *follicular conjunctivitis*, general measures for the correction of faulty hygiene or defects of nutrition are advised. In mild cases no local treatment is required. In severe cases, the patients should be segregated and boric acid irrigations given, if acute catarrhal symptoms are present. Local applications of one half per cent silver nitrate solution are made on alternate days for a short period of time, long periods of application are apt to produce xerophthalmia. In mild cases, operations for the expression of the follicles are unnecessary and in severe cases despite careful technique, they may be actually harmful—it having been found that subsequent superficial scarring may not only constitute a focus of irritation to the eye by producing pannus but also encourages exacerbations of the disease. The best results are achieved by observing the general measures already suggested. Time alone is an essential factor in securing results—which results cannot be hastened by the undue use of caustics or irritants, these not only act as irritants, but may actually cause permanent changes in the conjunctivae.

*Inclusion cell conjunctivitis*, like any other acute catarrhal ophthalmia, is treated by frequent irrigations and local applications of one-half per cent silver nitrate solution, followed later by lukewarm irrigations until the condition clears up.

*Trachoma* accompanied by acute symptoms, is treated upon the same general principles as any other acute catarrhal conjunctivitis. If pannus develops later a one per cent atropine solution should be instilled into the eye three times a day in conjunction with the application of hot compresses to the lid. The possibility of atropine atrophy must be considered and should this condition develop the use of the mydriatic should be temporarily suspended. In the hypertrophic or atrophic stage when the conjunctival and corneal symptoms due to irritation persist, surgical treatment is indicated but only after the acute symptoms have subsided. The operation of choice is the Heister-Kühnt operation, which embraces the removal of a greater part of the upper tarsal conjunctiva with its tarsus, and at times in elliptical portion of the lower conjunctiva. The after-treatment calls for the application of the copper stick to the residual tarsal conjunctiva until a smooth surface, free from acute or subacute manifestations results. Although recurrences may follow after operation, they are less frequent, less severe, and better controlled than if the patient had received no surgical treatment at all.

## DIARRHOEAL DISEASES OF INFANCY\*

By ROBERT SLOAN, M.D.

UTICA, N. Y.

IT is not my intention to discuss the various diarrhoeal diseases of infancy, but merely those points which I have found of particular interest in private practice, also as physician in charge of one of the Infant Welfare stations in Utica.

Infants fed on the breast entirely are not as subject to attacks of diarrhoea as those artificially fed; neither is the diarrhoea as fatal. With the commencement of artificial feeding, gastro-intestinal disorders acquire prominence.

Too often will the mother take the baby from the breast saying she has not enough nurse for it, without first consulting a physician or taking it to a Baby Station, which I am happy to say are now established in practically all cities. It is my custom in these cases to weigh the baby before nursing then have the mother nurse the baby in my presence, and then weigh it again. This simple procedure shows the mother the

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 21 1918.

amount of food that the infant receives. I then have the mother bring the child to be weighed from week to week. If now it is found that the infant is losing weight, the mother's milk is analyzed, if this then is found to be deficient, artificial feeding may be substituted and the breast discarded entirely.

The mother in these cases is, as a rule, one surrounded by well-meaning friends or relatives who have brought up one or more children, and as they say, "I guess I should know how to bring up this one," the unfortunate infant is handled and rocked from morning to night until it becomes accustomed to the rolling motion and refuses to lie in its perfectly good crib. It consequently gives voice to its sentiments as soon as it is put down, and because of this, it either has a belly ache or is hungry, and is again given some more rocking and is nursed, the babe then becoming quiet. Upon putting the child in its bed again, it rends the air with its cries, is picked up again, rolled about a bit, and undoubtedly will vomit, due to its full stomach, but the relatives and friends believe this is due to the poor character of the mother's milk and will suggest condensed milk or some prepared food. The food substituted is more or less difficult of digestion, defective of composition and liable to be supplied to the infant too frequently or in too large amounts, in this way setting up indigestion. The physician is usually called in to see these cases when a severe diarrhoea has developed, and after a thorough re-arrangement of the child's—or, better, the parent's—habits, the case will make a speedy recovery.

In a number of instances, the infant will be able to take food of a most faulty character, inducing indigestion, colic and malnutrition in one or another of its various forms, yet during the cooler weather we meet with either no diarrhoea or diarrhoea of a temporary and easily controlled form.

I might mention a case in this regard. The mother, of apparently sound mind, thinking the child did not derive enough benefit from the breast because it cried when placed in its crib, would, while eating, chew up a mouthful of meat and potatoes and feed it to the poor thing. The child was brought to the Baby Station, suffering with acute enteritis, slight diarrhoea and rapidly failing weight. It was with considerable difficulty that the cause of the diarrhoea was learned, and by stopping the bad habit of the mother by assuring her that her milk was all right, the condition was corrected.

Pure milk properly modified is undoubtedly the best food for infants, second, of course, to the breast. A fact that is a great many times overlooked, however, is that each and every infant is a case in itself and must have a formula particularly adapted to its individual needs.

The question of milk is a very important one. A good raw milk is very hard to obtain, no matter what precautions are taken, and it is because of this that a great many epidemics start and a great many infants and older children lost.

The infant mortality of New York, Chicago and Boston has been diminished since the general use of pasteurized milk, and the cases of infantile diarrhoea have markedly diminished.

In the months of November and December of 1916 and January and February of 1917 there was an outbreak of infantile diarrhoea in the city of Utica, N. Y., which was very puzzling, as at the time there was also an epidemic of typhoid fever. Investigation of these cases showed that the majority took milk from the same farm, a milk which up to this time gave a count of from 1-3000 per c c. A count was taken of the milk at the time of the outbreak, which was from 300,000 to 1,000,000 per c c. The barns and dairy were found to be in exceptionally good condition, all precautions being used as to cleanliness, etc., but the owner of the farm being unable to obtain help, had installed milking machines. These were all sterilized before milking, but it was impossible to sterilize the hose, and it was at this point that the milk was contaminated, as no matter how carefully the hose was washed, there was always a little milk which clung to the sides and made a splendid field for the growth of bacteria. At the time when we were called to see these little patients, the first thing we said was, "Boil the milk." Due to mechanical troubles in the milking machines, the epidemic suddenly stopped, as the use of the machines was impossible.

Allowing a child to have all the candy that it desires—in fact, a full allowance of any of the sweets—will lower vitality and thus the resistance to disease. I thoroughly believe that sugar in the form of candy should be prohibited until after the fifth year, and that a marked diminution in the number of deaths of children under five would be the result.

A great many infants are dressed entirely too warmly. In the summer months, all that is necessary for the infants to wear is a single light flannel or linen garment. Never allow an infant to perspire, as there is no doubt that it saps the vitality or irritates the poor child so that digestive disorders are started.

There is another form of diarrhoea which I desire to mention, namely, "The Diarrhoea of Starvation."

In the past two years I have had a number of these cases come under my care, and in only one instance was the baby breast-fed. In no case had a physician been called until the infant was all but dead, and was in need of immediate and drastic treatment. These children are the picture of starvation, their skin is tightly drawn over

the bones, the eyes are sunken and listless and they have a characteristic whine. They seem to want their food but are too weak to nurse. The respirations are very rapid, the pulse lost except with the stethoscope, the abdomen is distended and tympanic, the bowels are very loose, having from fifteen to thirty movements a day. The stool is liquid of a slight green color. It is with this class of cases that we have our most difficulty and which most often prove fatal.

The treatment of the diarrhoeas of infancy are as numerous as the stars. My usual procedure starts at the birth of the child, as I believe the prophylactic treatment of the utmost importance. All maternity work coming under my care is advised to go to the hospital, for the simple reason that the child is regulated from the beginning. It is not troubled by the curious and adorning friends, there is no walking of the floors, it is not given the thousand and one home remedies for the stomach ache, its nursing periods are regular. The mental attitude of the mother is better. She receives more rest and less advice from the neighbors than though she were home. At the hospital the bowels are not tampered with. I might mention here that it is the custom of several practical nurses to give the infant, on the second day after birth, a dose of castor oil. This immediately disturbs the bowels, the child suffering from this time with constipation. Thus in time allows of the growth of bacteria and the absorption of the toxic products the result of their growth, or allows irritating material to lie in the intestines, which in time causes an enteritis and its accompanying symptoms.

The education of the mothers in the proper care of the new born infant is absolutely essential. There is no better place for them to receive this education than in the various infant welfare stations or at the Little Mother Leagues. Here breast feeding is encouraged and the mother is taught the best diet and exercise and hygiene to enable her to nurse her baby, and she takes great pride in comparing the weight of her baby with that of others.

Where artificial feeding is necessary, the advisability of having the formula directed by a physician is impressed. The proper care of the nipples and the feeding bottles also the milk after it is prepared, is taught. The use of the pacifier is discouraged and the value of fresh air demonstrated. The mothers are taught not to feed the infants oftener than three hours up to six months of age, and not oftener than four hours after that time. I also attempt to discourage the use of water, it being my belief that it is not essential to the infant's welfare, as they receive in their food at least 88 per cent water.

The dressing of the infant is important. An infant should never be allowed to perspire, as

overdressing encourages intestinal fermentation. During the summer months, I advise the mother to remove the napkins from the baby. This has prevented a great deal of the chafing and irritability, and the vitality of the infant is not depressed.

It is essential to keep the infants under the closest supervision so as to recognize and treat any disturbance of digestion, no matter how trivial, immediately.

The attack occurring in the summer, hygienic precautions must be insisted upon. The infant should be placed in the coolest place possible—preferably out-of-doors, either in its carriage or a hammock under a shade tree or on the shaded side of the house. It is advisable to place a piece of mosquito netting over the child to keep flies or other insects from bothering it, as there must be absolute rest and quiet. The clothing should be of either a very light flannel or linen and a single garment is all that is necessary. The napkin should be removed and the buttocks thoroughly oiled or greased the infant lying on the napkin, which must be changed with every movement. A light flannel binder is kept on the abdomen, as the abdomen is very susceptible to variations in temperature. Sufficient clothing must be supplied at night, but only enough to keep the infant warm and not perspire.

Restlessness may be allayed by giving a tub bath starting at the temperature of 100 degrees and gradually reducing it to 85 degrees. Absolute cleanliness must be insisted upon, and this is secured by the immediate removal of soiled drapers, which should be placed in a disinfecting solution in a room away from the patient.

I have noticed no great benefit from the patient going to the seashore or other resorts and the change during the attack will a great number of times aggravate the condition.

My medicinal treatment of diarrhoea consists first of the administration of castor oil—two drams to an infant one month old. If there be vomiting calomel is administered in 1/10 grain doses every ten minutes for fifteen doses, followed in five hours with castor oil. During the administration of the cathartic food is prohibited but only until an action from the oil is obtained. I do not believe it is advisable to stop food for a longer period, as the child becomes cross and irritable and this will only have a tendency to aggravate the condition. If for any reason such as menstruation or pregnancy the mother's milk is suspected, it is stopped and the child given either boiled milk or pasteurized milk, diluted half with barley water. I do not believe in the use of barley water longer than forty-eight hours as it will aggravate rather than retard the condition.

In cases where the gas bacillus is the offending agent, I have used the Bulgarian bacilli tablets,

but with negative results. Have in these cases been far more successful with the administration of buttermilk, combining one-tenth of an ordinary yeast cake with this three times daily.

Of the drugs bismuth is best suited to influence the intestinal process. The subnitrate or subcarbonate are the safest. It being insoluble, it is best administered by mixing with pulverized sugar in a spoon, placing this in the child's mouth and then allowing it to nurse, or by suspending it in a mucilage. The stools are blackened, and it is well to tell the mother of this fact if you value your sleep. Bismuth should be used in large doses, ten grains to an infant one month old, every two hours. A child one year old may be given twenty grains every two hours throughout the attack with no untoward effects.

Occasionally where there are very frequent movements and a great deal of pain, the bismuth may be combined with Dover's powder,  $\frac{1}{4}$  grain to a child one year old. The dose of any of the opium derivatives should never be given so as to check the diarrhoea or to cause stupor.

Lime water, bicarbonate of soda, magnesia or chalk mixture may be used where there is acid fermentation of the stomach but best of all is the use of sodium citrate, one grain to the ounce of milk. The use of stimulants is often required in severe or prolonged cases. Old brandy is best, used diluted with at least eight parts of boiled water, to this I add the beaten white of one egg. This is administered frequently and in small amounts. I have seen an infant of one year take as much as an ounce in twenty-four hours.

In cases of extreme prostration hot colon irrigation of water, hot applications, such as hot blankets, hot baths and mustard packs, are beneficial. Subcutaneous injections of saline where the case is approaching the cholera infantum type are used. Strychnine sulphate in small doses per hypodermic every two hours helps retain the general tone of the body and is of the greatest service.

In the treatment of those cases which I term "Starvation Diarrhoea" my first procedure is removal to the hospital. No cathartic is administered as the intestinal tract has been thoroughly cleansed and the infants cannot stand it. The use of stimulants are required, as the cases are always severe.

The medication in this type of case consists of the administration of bismuth subnitrate, 10 grains, to an infant one month old.

The dietetic treatment, which has proven of the greatest benefit and which I use now entirely in this class of cases is the feeding of undiluted whole milk, regardless of age. At first it is administered by means of a medicine dropper, it taking twenty minutes or longer for an ounce,

but in a very short time the child will take notice and be able to nurse from a bottle, taking its full amount—three ounces to a child three months of age every three hours. The gain in weight in these cases has been very rapid and they seem to have no bad effects, either with their bowels or general system. I might mention a case or two of the Starvation Group.

*Case 1*—Baby M. C., aged three months. This child was removed from the breast at two months of age. Because the child did not gain in weight, and without consulting a physician, it was placed on a condensed milk formula. This also failed to make the child gain, after it had been used for four weeks, and as it was so emaciated and was unable to nurse and was suffering from such a severe form of diarrhoea, I was called.

The patient was removed to the hospital. The temperature on admission was 102 degrees, the pulse too rapid to count, the infant having on the average of twenty to thirty stools daily, the respirations were very rapid and feeble, and accompanied with an expiratory whine. The weight on admission was six pounds. The infant started on a formula containing two ounces of milk and two ounces of barley water every three hours, medication consisted of bismuth subnitrate, ten grains every two hours. No cathartic was administered, as the infant's alimentary canal had already been thoroughly cleansed. On the second day in the hospital the diarrhoea had improved, but the infant's temperature was 95 degrees, no pulse, respirations 48. External heat was applied and the infant given  $\frac{1}{600}$  grain of strychnine every two hours per hypodermic. The infant was then given undiluted whole milk, three ounces every three hours. At first it was necessary to give this with a medicine dropper and the child was only able to take about half the amount in forty minutes, but in three days it was able to take its feedings from a bottle. The diarrhoea checked on the third day and the bismuth was discontinued. Discharged the patient from the hospital in six weeks with a gain in weight of two pounds. The baby received nothing but whole milk from this time until it was eight months old, with the exception of orange juice, and at eight months weighed twenty-one pounds and three ounces, and at the end of one year twenty-nine pounds and four ounces.

*Case 2*—Baby Paul Mc., age three months. Nursing baby, had never been weighed. I was called and found a very much emaciated baby, unable to nurse and suffering with a very severe diarrhoea, having thirty-five movements a day. The baby was sent to the hospital, the temperature on admission was 94.8 degrees, pulse could not be counted, respirations 44, the child was cold and clammy. The treatment of this case

was as follows: Hot mustard packs were applied, strychnine sulphate grain 1/600 was administered every two hours per hypodermic, and bismuth subnitrate 10 grains every two hours. The dietetic treatment consisted of three ounces of whole milk every three hours. This was at first administered with a medicine dropper, but in two days from a bottle, the diarrhoea checking on the second day and the bismuth stopped. This child on admission to the hospital weighed seven pounds and fourteen ounces. At the end of one week it lost three ounces, at the end of twelve days it weighed eight pounds and six ounces—a gain of eight ounces. From this time on, the child made gains by leaps and bounds until at the end of seven months it weighs nineteen pounds and four ounces. This child has received nothing but whole milk since it came from the hospital with the exception of orange juice, and as its weight and general symptoms show, it most certainly is thriving.

These Starvation Diarrhoea cases have been of particular interest to me and certainly demand the profession's most careful consideration.

### Discussion

Dr. LEO WOLF, Buffalo. I want to congratulate Dr. Sloan on his very able paper, which gives us much to think about.

As far as diarrhoea is concerned we must classify our diarrhoeas, first, into alimentary and infectious diarrhoeas. As far as the treatment is concerned, I do not believe that whole milk, nor any other food, can be absolutely called a remedy for any one of the diarrhoeas. The most important remedy in any kind of diarrhoea is H<sub>2</sub>O—water. No matter what you do with the baby, give it water—by the anus, hypodermically, by the mouth—any way you can but give it water. In my opinion, in those cases that the Doctor calls "Starvation Diarrhoea" the babies simply did not get enough water. A baby has to get its three ounces of liquid per pound of body weight, and if you can give that, you can cure the baby, you can get it back to health. If you can't, the baby is going to die, no matter what else you give.

As far as foods are concerned, they come later, and I personally am afraid of whole milk. I have tried it for years, and I know that some of my friends are great believers in milk and in whole milk, but I still want to be careful with it.

As far as medication is concerned I think that in those cases of so called "Starvation Diarrhoea," that you get a certain form of acidosis, and if you can administer your sodium bicarbonate in your water, then you can get a still better result.

Let us remember that in all of these cases, first of all we must properly classify our cause of diarrhoea.

As far as giving castor oil or calomel is concerned, I have given that up long ago. The best thing is to remove the poison, and the poison in this case is the food. Don't give any more to the baby.

There is one point I want to mention, and that is in regard to the pasteurization of milk. I still believe that a first class raw milk delivered at the home, not at three or four o'clock in the morning when it is allowed to sit out in the sun until the family gets up, but delivered at a reasonable hour, is the best thing. Then you can boil it quickly and you have a perfectly safe food. I think it is a mistake to tell people they are safe when they are using pasteurized milk. The microbes are only partially killed. I, for one, want to get the best of milk, get it raw and then do my own sterilizing. Then I know I get a good milk. I think pasteurization is a step backwards instead of a step in advance.

Dr. WILLIAM B. HANBIDGE, Ogdensburg. I have been much interested in Dr. Sloan's paper on whole milk feeding in diarrhoeal diseases. As I have been experimenting along these lines for over twenty years. The results obtained are not surprising to me, for I have seen many children that were apparently doomed to die saved by undiluted cow's milk.

The time at my disposal will not allow me to go into details, but I will refer those who are interested in my experience to a paper read at our Rochester Meeting and published in the New York State Journal of Medicine, October, 1913 page 541.

Further experience has absolutely convinced me that the whole milk is the best food we have for infants. Why should we add water? Considering the physiology of infant digestion from an evolutionary standpoint, there is no reason to believe that breast-fed infants received much water until the comparatively recent advent of the nursing bottle. We can learn something from comparative physiology. The young of the lower animals subsist without water, while living exclusively on milk. When we get away from Nature we are travelling in the wrong direction. This was impressed upon me by a North Country practitioner, who remarked that he practised medicine several years before it dawned on him that the Great God of Nature was sometimes right.

I think we have made a great mistake in advising mothers to give infants plenty of water. They resort to the water bottle to prevent the child from crying. We should teach them there is plenty of water in milk and that a reasonable amount of crying gives the young infant needed exercise.

As cow's milk contains about eight per cent water a child weighing ten pounds and consuming twenty-two ounces of milk in twenty-four

hours will have an intake of water per pound weight, equivalent to eighteen pints for an adult weighing 150 pounds

Of course, a sick child that is unable to take much milk must have water, particularly if feverish, or if there is diarrhoea

I cannot see any reason why free dilution of the gastric secretions should aid digestion, and clinically I am sure that it does not

I wish to say a few words about sugar. Sugar artificially prepared is a very modern addition to our dietary. Perhaps Nature, in milk, fruits and honey, may have provided all that is necessary. In fact, Nature adapted our organisms to those conditions.

I know that some infants are injured by being fed sugar and that many thrive well without it, and seem quite as healthy as those fed sugar, and are not so cross, according to the statements of the attendants.

DR JULIUS SCHILLER, Amsterdam. There is one thing I would like to learn from this discussion, and that is with reference to the introduction of water in these cases of decomposition. As I understand the problem, it is not the absorption but the retention of water which is involved. Those children have lost through their diarrhoea mineral salts and with it the ability to retain water. The water retaining apparatus, the osmotic condition of the body fluids has been changed and water, if given by mouth, is not retained.

I would like to hear from some of the gentlemen who have had any experience with normal saline solution given intraperitoneally, by hypodermoclysis, Murphy drip, or any other method which will actually raise the water-retaining capacity of those cases.

DR GEORGE D. SCOTT, New York City. I enjoyed Dr Sloan's paper, but I don't agree with him. In the first place, if Dr Sloan had been for a long time in some of our large cities, Boston, New York, Philadelphia, or Chicago, for instance, and connected with the hospitals there, I doubt very much whether he would not have modified some of his views. In the first place, I have always been brought up to believe that the ideal food for infants contains proteins, carbohydrates and fats. The Doctor eliminates one of the most wonderful foods in nature, and that is sugar. It not only acts as a tonic through its fermentation, the changing into alcohol and carbonic acid in the stomach gas, but it aids in the digestion of proteins and fats. It is a very important food. In the first place, you cannot easily standardize whole milk. An infant has to have a certain amount of fats, proteins and carbohydrates. If you use whole milk, you cannot tell without much labor anything about the amount of fat, protein and carbohydrate you get into that child. If you use skimmed milk and the cream separately, you can form a standard

by giving so much of the fat and protein and by adding sugar for the carbohydrate.

I don't care how the diarrhoeal diseases are classified, whether one way or another, the whole treatment depends upon what goes into and comes out of the child.

I agree thoroughly with Dr Leo-Wolf as to his views in the pasteurization and sterilization of milk, because there is so much deception practiced concerning it. I think if you could go over the dairy farms and see the care taken of the milk, you would entirely retract your ideas of pasteurization, because the milk comes from there in a perfectly clean condition and the child gets it as natural milk—a physiological food which the nursing baby, however, gets from its mother. It is just as absurd to pasteurize cow's milk as it would be to pasteurize mother's milk.

I don't agree with the Doctor at all with reference to the clothing. In my mind, clothing never affected a child's intestines. It is true that it causes a lot of trouble—eczema and unpleasant conditions of the skin—but I doubt very much whether it has anything to do with internal health.

My method of treating diarrhoeal diseases has entirely changed since I left Harvard, and I think it has changed for the better. That is, with reference to putting food into the stomach and the cleansing of the intestines. I want to say here that the finest cleanser for the intestines is not water, it is not saline solution, it is fruit juices—juices of the fruits God gives us. If the child gets the juices of fruits, of prunes and apples, and gets another raw fruit juice, which is the pineapple—the finest juice ever created—and added to that a modification of raw, unpasteurized, unsterilized milk, with bathing and with fresh air at the seashore—not in the city—the child will get well.

DR CONWAY A. FROST, Utica. I just want to say a few words. I think Dr Leo-Wolf has brought out a good idea—that we should make closer distinction with regard to classification. The men in Boston and in that part of the country specialize upon the bacterial side of diarrhoeas. Possibly the men in other parts of the country have laid too great stress upon the other side. If we can compromise on that thing and not become biased, paying a little more attention to each and make a closer distinction, as Dr Leo-Wolf suggests, it seems to me an extremely important thing would be accomplished. It is necessary that we do not call diarrhoea a disease in itself, but that we get to the root of the matter as to what is the cause of the diarrhoea.

No mention was made with reference to the nursing infants. Particular stress must be made upon the fact that the mother should be kept in a calm condition. She should not be over-excited, but all her surroundings should be as

a perfect machine. As I have said so many times to this Society that you must be tired of hearing it, the first thing a doctor does if some thing is the matter with the child when the mother is nursing her baby, is to inquire as to what the mother is eating. But what the mother eats has nothing to do with this, the question is whether she has had some nervous upset. That is what would upset the baby more quickly than anything I know. We find it in the poorer classes, even though the nervous systems are apparently never so easily upset, but the mother is worrying and fussing over where they are going to get their daily bread. Another mother is worried and cannot nurse her child. It is not because she has been eating cucumbers and lobster salad. She can digest her food if her nervous system is in proper shape.

With reference to the whole milk. It leaves out some of the elements we have to depend upon. The reason we dilute the milk is not because we want to give more water, but to get the milk into the proper consistency so it comes somewhere near being like the mother's milk. Cow's milk is not nine per cent mother's milk and never will be unless it is modified. It must have more sugar and must be diluted, it must have carbohydrates.

DR EDWARD J. WINKOOP, Syracuse. Unfortunately I did not hear Dr Sloan's paper but I have been very much interested in the discussion, especially in what Dr Scott had to say in the use of pasteurized milk. It seems to me that we, as physicians should take a different stand in regard to the obtaining of certified milk for our patients. In Syracuse, for instance, we have two certified milk supplies. One has been in existence for quite a number of years, and the other has only been in existence a very short time, but in going over the figures I have been surprised time and again to see how few people are educated up to the use of a good certified milk.

It is my personal observation that when we get good certified milk these diarrheas decline. It is only when we get the poor milk or milk of not standard quality, that we should take up the question of pasteurization.

There is one question I would like to ask Dr Scott and that is in regard to the use of fruit juices. We all, of course believe in the use of fruit juices. We all of course believe in the use of these at certain times. I want to know how early he begins the use of them in the average bottle baby.

DR GEORGE D. SCOTT, New York City. If I discussed the value of fruit juices I would talk all night. Some years ago I began studying the value of these juices in the treatment of diarrheal diseases of infancy and children. You can use fruit juices almost from the time the child is born. When the child is very young, use

the cooled fruits, such as the apple or the pear or the prune strained and sweetened. The question is not, Is the apple cooled too long, but Is it cooked long enough? Also it is necessary to add enough sugar to cause a nice little tonic action to the stomach. Warm raw pineapple juice can be used almost from the birth of the infant. All you have to do is to warm it slightly for the baby. Don't use it at all cool or cold. Add a little sugar, if necessary. Get a ripe pineapple and see that it is squeezed properly, but the pineapple must be ripe. Prunes must of course be long cooked. I usually add to a quart of water an apple or a number of prunes and have them boiled down one-half and then add the original half of boiled water and strain. Then keep it on ice. You can give it warm during the day with raw milk, or after the meals. You can give the child two or three teaspoonfuls between times if desired, and to an infant a teaspoonful or half of a teaspoonful, q.s. The addition of much water to the diet is not necessary, as the fruit juices give the same but much better results. As I said before, if I talk on fruit juices and the beneficial results in disease through the use of fruit juices I would talk all night.

DR J. ROBERTS JOHNSON, Syracuse. I wish to congratulate the Society upon the splendid paper Dr Sloan has given us. Some of the questions in pediatric practice are academic and I suppose we will never think alike. There are many points in the Doctor's paper that I would like to hear discussed, for instance, the matter of over dressing.

It is my personal belief that infants and young children are injured a great deal more by being dressed too warmly than by being under dressed. It is a factor we physicians must earnestly strive to overcome—the matter of clothing and re clothing the child because it is January or December or July rather than by the temperature of the day.

Now, in regard to the pasteurization of milk. I am thoroughly agreed with all that has been said and yet I do believe the sterilization of milk is a very great aid at times in the case with which we can prepare it for our little patients. I am in the habit of having milk properly boiled in the earlier weeks and months, and thereby having better digestion. The price the Doctor spoke of should be put out of business as a matter of law. I think it is one of the contemptible things that manufacturers are allowed to make and to thrust upon the innocent public.

I think we are very often defeated in our purpose by permitting the mother or the nurse to give indiscriminate amounts of water. The stomach is overloaded and when the food is given regurgitation ensues. I think half an ounce of water to a young infant is enough at any time.

DR ROBERT SLOAN, Utica So many points were brought up that it would take hours to discuss them In regard to the pasteurization of milk

Pure certified milk properly modified is undoubtedly the best food for infants, second, of course, to the breast A fact, however, that is a great many times overlooked is the cost of the certified milk, which makes it impossible for the poorer classes to supply it to their infants

A great number of epidemics have been traced directly to raw milk, and in a majority of cases there have been found a case or cases of some specific communicable disease upon the dairy farm or among the employees who handled the milk

Work by the British Royal Commission and by Park, Smith & Ravenel have shown that bovine tuberculosis is transmittable to man, and that from 5 per cent to 15 per cent of all cases of tuberculosis in children are of bovine origin

For a great many years, physicians of Continental Europe recommended the use of boiled milk for the feeding of children and infants, we in this country, however, have not considered raw milk of any considerable danger, providing it was produced under sanitary conditions About twenty years ago they began the boiling or pasteurization of milk The use of this milk has become more and more popular A few cases of scurvy have been reported out of the many thousands that were using it

The "Flash system" was the first method of pasteurization used This consisted of rapidly passing milk over a coil raised to the temperature of 167 degrees F Careful studies of this method of pasteurization showed that it did not destroy all pathogenic bacteria, as the milk in passing over the coil formed a film which varied in thickness, and the milk was subjected to varying degrees of temperature Later investigations showed that in order to destroy the pathogenic bacteria, it did not require such a high degree of heat and that milk exposed to a temperature of 142 degrees to 145 degrees F if maintained for thirty minutes would have this effect A few physicians make objections to pasteurized milk on the grounds that it causes scurvy, that it has a flat taste, and that food value is decreased In New York City the greater part of the milk is pasteurized, and there has been no appreciable increase in the number of deaths from scurvy, even though there were, the dangers from other milk-born diseases far greater than the dangers from scurvy By the proper administration of fruit juices starting at the first month, scurvy will be prevented Proper pasteurization produces absolutely no change in the taste of milk As for decreasing its food value, there have been various experiments made in the feeding of pasteurized milk Doctors Holt and Park, of New York City, in two groups of cases—one

fed on modified raw milk, and the other on modified pasteurized milk—showed that there were fewer cases of diarrhoea and fewer deaths than those fed on pasteurized milk

Dr Scott believes that if it is necessary to pasteurize cow's milk, it should be necessary to pasteurize mother's milk, but with this I cannot agree The reasons are perfectly obvious Mother's milk is delivered sterile, it is not shipped, and therefore has not been iced, and has not been contaminated by handling

Statistics show that diarrhoeal diseases have markedly decreased since the introduction of pasteurized milk For this reason, it is absolutely essential to the community to have a good pasteurized milk

Dr Schiller mentions the use of saline I use it only in cases of collapse, and then intravenously I never use it intraperitoneally

I do not believe in the use of water in the feeding of infants, as 88 per cent of milk is water

Dr Frost mentioned keeping the mother quiet I believe the mother's excitement is chiefly due to the advice given her by the neighbors, by the mother-in-law, the grandmothers or maiden aunts in regard to the proper care of infants This is enough to make anyone excitable

## INTESTINAL INTOXICATION IN INFANTS\*

By OSCAR-M SCHLOSS, M D,  
NEW YORK CITY

**I**NFANTS suffering from diarrhea, or from nutritional disorders accompanied by diminished intake of fluid, frequently develop severe toxic symptoms Among such symptoms are somnolence, coma or stupor, convulsions and great prostration The term "Intestinal Intoxication" has been used to describe such cases, although this term is far from satisfactory it is retained in the absence of a better one

Howland and Marriott found that acidosis is a frequent complication of diarrhea in infants and from their observations concluded that it was due to the failure of the kidney to eliminate acid, probably acid sodium phosphate

In recent work the writer found that the blood of infants with intestinal intoxication showed some important abnormalities The blood was often more concentrated than normal both in the relation of plasma to corpuscles and in the amount of dissolved solids There was a retention of nitrogenous waste products similar to that occurring in uremia

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 21, 1918

The total nonprotein nitrogen was often over 200 mg and the urea nitrogen more than 100 mg per 100 c.c. of blood. The uric acid, creatinine and ammonia showed such departures from normal as have been found in the blood in uremia.

Such blood changes demonstrate the presence of diminished kidney function. This is not due to an anatomic kidney lesion. It is due to oliguria or anuria arising from the greatly depleted water supply of the body and the diminished blood volume.

The acidosis which occurs so commonly in intestinal intoxication is not due to the formation of abnormal acids nor to increased formation or diminished destruction of normal acids. All of the available evidence points to the fact that it is due to defective kidney function. It is well known—due to the work of Henderson and his coworkers—that the kidney by eliminating acid plays a very important role in preserving the normal reaction of the blood and tissues. Failure of kidney function leads to retention of acid and acidosis.

With the facts enumerated as a basis we are in a better position to outline a rational treatment for intestinal intoxication.

There are three important considerations in the management of these cases. The fluid of the tissues must be replaced, the secretion of urine must be re-established and acidosis must be eliminated.

The treatment directed toward the first and second conditions is identical and consists in the administration of large amounts of normal saline or Ringer's solution. The amount should be sufficient to reduce the blood concentration to normal and to keep up a normal secretion of urine. The work of Underhill and his co-workers on animals showed that injected fluid rapidly leaves the blood stream and is taken up by the tissues. This is apparently true to a considerable degree in infants with intestinal intoxication, so that it is only after the tissue fluid is partially replaced that the blood concentration is reduced to normal. A fairly accurate guide to the administration of fluid is a determination of the hemoglobin according to the method of Palmer. If the blood is more concentrated than normal the hemoglobin is increased. In such cases fluid should be given until the hemoglobin is normal.

In most of the severe cases of intestinal intoxication it is necessary to give fluid intravenously, intraperitoneally, or subcutaneously. Owing to the necessity of giving it frequently the intravenous method is not desirable except for one or two injections. As shown by Bruckner and Macey intraperitoneal injection of saline solution is a very satisfac-

tory method of giving large amounts of fluid and I feel that this method is the one of choice. With the use of perfectly obvious precautions the method is without danger. It offers the advantages of permitting the injection of a large amount of fluid of being almost painless and of giving very prompt absorption.

The amount of fluid to be given depends on the degree to which the body fluids are depleted, on the amount of fluid the patient is able to ingest and on the severity of the diarrhea. Fluid should be given until the blood concentration is normal and until there is an approximately normal secretion of urine. It should be repeated sufficiently often to fulfill these conditions.

A question of importance concerns the possibility of giving too much fluid. I believe that this is possible and that edema and great dilution of the body fluids can be produced. There is little danger of this if only sufficient be used to keep up the secretion of urine and to keep the blood concentration normal. The danger of giving too much fluid is slight and is of little moment compared with the danger of giving too little.

A valuable adjunct in promoting the secretion of urine is the intravenous injection of dextrose. This should be given in 15 to 20 per cent solution and from 3 to 5 c.c. per kilo of body weight is sufficient. The dextrose is not used for its effect on nutrition but merely as a very efficacious diuretic. It should be given directly following the injection of a large amount of saline as its diuretic action is due to withdrawal of fluid from the tissues into the blood stream and for this to occur a sufficient amount of tissue fluid is essential.

It might be well to say a few words at this time about intravenous injections in infants. In a few infants with intestinal intoxication there is a scalp vein of sufficient size but in most instances one must choose between the dissection of a vein at the bend of the elbow or the use of the superior longitudinal sinus as advised by Tobler and by Helmholz. I do not think that there is much question that the latter is the method of choice. On Dr. La Fette's service at Bellevue Hospital we now use a 20 to 21 gauge needle only one-fourth inch in length and with a short beveled point. By the use of such a needle transfixion of the sinus is practically impossible. All injections should be given by gravity and the upper level of the fluid column should not be more than 1½ feet above the head of the patient. In no instance have I seen any harmful effects from the use of the sinus either for withdrawal of blood for diagnosis or for intravenous injections.

The acidosis which occurs in intestinal intoxication requires special treatment. Since

acidosis is not present in all cases its recognition is important. An accurate diagnosis can be made only with the aid of laboratory tests. The only clinical sign which is of value is the presence of hyperpnea or air hunger. This is present in many cases and is diagnostic. Its absence, however, is of little negative value for many cases with mild acidosis show no air hunger and this sign is often not evident until the acidosis has reached a severe grade. Moreover, in small infants a severe grade of acidosis may be present with no air hunger.

A determination of the carbon dioxide tension of the alveolar air is of great value in detecting acidosis and by means of the simple apparatus of Marriott is no more complicated than a hemoglobin test. After the administration of sodium bicarbonate, however, this method may be very misleading, for even though the acidosis is corrected the alveolar carbon dioxide may remain low.

The most accurate method is the determination of the plasma bicarbonate by the method of Van Slyke.

Whenever possible the amount of sodium bicarbonate required should be determined from the carbon dioxide tension of the alveolar air or from the plasma bicarbonate. When the latter is determined the formula of Palmer and Van Slyke may be used to estimate the amount of sodium bicarbonate to be given. The formula is as follows:

$$g = \frac{bW}{38}$$

g—Grams of bicarbonate necessary

b—Amount which the plasma bicarbonate must be raised to render it normal

w—Weight of patient in kilos

When the alveolar carbon dioxide is determined the formula may be modified, as follows:

$$g = \frac{[(40 - \text{observed alveolar } CO_2) 1.5] W}{38}$$

38

The factor 1.5 is used to convert the tension of carbon dioxide in the alveolar air to terms of plasma bicarbonate.

If neither of these tests can be made, all cases of intestinal intoxication should be given sufficient sodium bicarbonate to change the reaction of the urine to normal. Litmus is not a good indicator for this purpose as it requires a considerable degree of alkalinity to turn blue and when the point is reached the plasma would be much more alkaline than normal. The reagent of the Neubauer\* is satisfactory for this purpose. About 5 cc of urine is stratified with 1 cc of the reagent. If the urine is of normal re-

action there is a diffusion of blue throughout the urine. If the urine is hyperacid it absorbs no color from the reagent. For the same purpose Marriott has suggested the use of an alcoholic solution of cresol purple. A few drops are added to 2 to 3 cc of urine. If the reaction of the urine is within the normal range the solution takes on a magenta or purple color. By giving enough bicarbonate to keep the reaction of the urine normal acidosis can be prevented or eliminated. This plan has the disadvantage that too much bicarbonate may be given, for the plasma bicarbonate is often normal even though the urine is hyperacid. The harm from this occurrence, however, is very slight in comparison to the seriousness of severe acidosis.

If the patient is not vomiting and the diarrhea is not severe, sodium bicarbonate may be given by mouth in 3 to 5 per cent solution. Milder grades of acidosis may be corrected in this manner. In the presence of severe vomiting or diarrhea or if the acidosis is severe it is necessary to give the bicarbonate intravenously or subcutaneously. For such administration the solutions should be specially prepared.

If sodium bicarbonate is heated it is changed to sodium carbonate, which is very irritating to tissues. There are brands of bicarbonate on the market which are usually sterile and by their use the solutions for injection may be prepared as follows. The proper amount of freshly distilled water is boiled in an Erlenmeyer flask and allowed to cool. The bicarbonate is dissolved in the cooled water and the solution is warmed slightly before injection. For intravenous injection a 4 per cent solution of sodium bicarbonate is used, for subcutaneous injection a 2½ per cent solution. For most cases a subcutaneous injection is sufficient. Intravenous injection should be given only when the acidosis is very severe, and not until measures have been taken to replace the loss of fluid. Otherwise the concentration of the blood may be much increased and harm result.

A consideration of importance is the possibility of harm from too large a dose of bicarbonate. I believe that such a danger does exist and is sufficiently great to make it desirable to gauge the dose as accurately as possible. The more definite symptoms are edema and tetany and are more likely to occur from intravenous injections before the secretion of urine is re-established. When a normal amount of urine is being voided excess alkali can probably be eliminated.

By means of the treatment outlined, the toxic symptoms in most cases of intestinal intoxication may be eliminated. Despite this improvement a great number of the infants die of malnutrition and this is especially true of those in hospitals.

During the first 24 to 48 hours, until the water loss is replaced, the acidosis eliminated

\* This reagent is made as follows: 0.1 to 0.2 gm of C. P. Iackmold is dissolved in 10 cc of 96 per cent alcohol. The solution is boiled down to 5 cc. Add 100 cc of ether and filter. Neubauer *Terhandl. Deut. Kong. Inn. Med.* 1911, XXVIII 160.

and the secretion of urine re established, the diet should consist of cereal decoctions only. For the subsequent feeding of these patients there is nothing new to offer. The same materials and resources are required as are of use in feeding of infants with severe diarrhea or malnutrition.

### Discussion

DR J ROBERTS JOHNSON, Syracuse. Mr President and fellow-members of the section. According to the program I am down to discuss Dr Schloss' most excellent paper, but unfortunately, it was not my privilege to have heard it until now.

Most of us are more or less familiar with the doctor's scholarly work along this and other lines, and we certainly have been helped in the understanding of this interesting subject by listening to this paper.

As you realize the work of finding out the causes of so called 'intestinal intoxication' is very largely a laboratory procedure and therefore, the physician who is not a laboratory man must depend upon the findings of those who are doing this specific and definite work.

I think we all agree with the doctor that the term "intestinal intoxication" is an unfortunate one, because it is a general intoxication rather than an intestinal, and the poison may not be of intestinal origin. I think the balance of what Dr Schloss has told us refers very largely to the fact that there is some defect in the urinary secretion which gives us the clinical manifestations which he so vividly describes. The amount of urine which the kidneys secrete in this clinical picture is very markedly decreased and consequently the toxic substances normally secreted by the kidneys are retained and are the cause of considerable irritation if not inflammatory processes.

Uremic symptoms are frequently present and yet the kidney lesions, as we here find them, are secondary and not etiological in the original disorder. In uremic poisoning we have an organic lesion, and in intestinal intoxication we have no pathological condition of the kidneys. The great water loss in diarrhea is undoubtedly the chief factor in the production of the abnormal kidney output of albumen and casts. There is, of necessity, a lack of proper function of the renal secretion because of the lack of fluid. Just to the extent that diuresis is lessened are toxic symptoms increased.

When the tissues of the body become dehydrated we have varying clinical symptoms depending upon the organs that are affected. When the blood vessels are emptied because of lack of fluid there is naturally less blood flowing through the kidney, and consequently less toxic material is eliminated. Clinically there is a very close relation between uremia and intestinal intoxication.

It is well recognized that in some other conditions, for instance, in infantile scurvy, we have a limited urinary output and sometimes have albumen and blood cells and casts. As soon as orange juice is given, there is a marked increase in the urinary secretion, and the baby rapidly gains. Whether this is due to the acid given, or to the increased fluid, or both, I think is not quite clear.

Dr Schloss spoke of the presence of acidosis in the severer types of diarrhea. My own feeling is that it is present perhaps, in every severe type of diarrheal condition and that we at the bedside and in the hospital without the finer laboratory possibilities, must depend very largely upon giving the child in some form the well-known remedy of sodium bicarbonate which in the vast majority of cases will at least cure the hypernea and will improve the child's general physical condition although the baby may remain semi-conscious and even die showing that there is an underlying cause not yet removed.

The elimination of toxins is best promoted by the free use of fluid. Colon irrigations assist in this elimination from the bowels, the kidneys and the skin.

In the severer types as seen in cholera infantum, the only efficient way to supply the great amount of fluid lost is by hypodermiclysis, one-half pint every twelve hours.

Now, you may think as you like about endomet. I know that there are those who advocate its use and those who are opposed to its use. I believe it is a mild intestinal antiseptic and that it does increase the flow of bile. I believe the results we obtain verify that statement. While we probably are dealing with some unknown toxic agent as the causation of so-called intestinal intoxication we do know the infant is suffering with a perverted metabolism, a marked fluid loss and a high non-protein nitrogen in the blood. Consequently to correct the hyperacidity of the system we administer alkalis. To supply fluid loss that the circulation may regain its tone and the tissues their fluidity, we give normal saline. To increase normal glandular activity we give glandular stimulants to regulate the normal glandular functions.

DR OSCAR M SCHLOSS, New York City. I should like to say a few words in regard to Dr Johnson's statement regarding the frequency of acidosis. Acidosis is present in most of the severer cases of diarrhea, but not in all and many babies die from a result of diarrhea without developing acidosis.

I agree with Dr Johnson that in the absence of laboratory tests the proper procedure is to give enough alkali to render normal the reaction of the urine. Whenever possible the laboratory tests should be done as the administration of the proper amount of bicarbonate is thus insured.

## COMPLEMENT FIXATION WITH A SPECIFIC ANTIGEN IN ACUTE POLIOMYELITIS

By M NEUSTAEDTER, M D, Ph D,  
NEW YORK CITY

THE diagnosis of acute poliomyelitis when the lesion is confined to the cord—the anterior horns—with the evident flaccid paralysis, is obviously very simple. When, however, the lesion is confined to the brain it is a very difficult matter to say that we are dealing with polioencephalitis. The cytology of the spinal fluid is no criterion, since any form of meningeal inflammation will give us an increased cell count, a positive globulin and albumen reaction and an intensive sugar reduction. Much less is the clinical picture an index, for this is altogether dependent upon the site of the lesion and not its character. Then there is the so-called abortive type without any definite symptoms. What evidence is there that we are dealing with a case of poliomyelitis? And yet we cannot overestimate the importance of early diagnosis just in that type of cases, for to them we might be of help if assured early that we are dealing with the proper case. During epidemics anything with fever, vomiting and diarrhoea passes off as poliomyelitis, and if recovering, considered as one of those abortive types.

The medical profession felt all along that some additional test is necessary to point at least with some amount of certainty to the correctness of the diagnosis, some test that will supplement the clinical findings. As we are dealing in poliomyelitis with an infectious disease a complement fixation test with a specific antigen seemed feasible. And this was attempted by some investigators so far without success.

Having succeeded in collaboration with Dr. E. J. Banzhaf, at the Research Laboratories of the Department of Health of New York City, to produce an antipoliomyelitis horse serum by injecting two horses with the virus of poliomyelitis previously digested with trypsin, it occurred to us that we might possess in it an antigen potent enough to produce a complement fixation in sera and spinal fluids of typical and suspected cases of poliomyelitis.

This specific antigen is obtained in the following manner. A 5% suspension of brain and cord of monkeys, that have died of poliomyelitis, is filtered through a Berkfeld or a Heim filter, sterile water being used as a menstruum. Trypsin is added in proportion of 1:50 and permitted to act at room temperature for three hours, 0.4% tricresol is then added to stop further action by the trypsin. This is kept in a refrigerator and ready for use. It keeps well for a month without impairing its activity.

Miss M. A. Wilson, who made all the tests for us in the Research Laboratories of the Department of Health of the City of New York, pursued the following technique. The antigen was diluted 1:5, the spinal fluid was used in 10 times the amount of the serum. The tubes were incubated as a rule for two hours in the water bath at 37°C. Earlier in the work the antigen was used in less than one-fourth and later less than one-half of the anticomplementary dose. It is not inclined to be anticomplementary and was tested with each reagent alone, and these controls gave no hemolysis.

As controls we have used other bacterial antigens, such as that of tuberculosis, streptococcus and meningococcus and the Wassermann reaction. In all the tests two units of complement and two units of amboceptor were used, the cells having been sensitized with the amboceptor before they were added, 0.1 cc of a 5% suspension of sheep's corpuscles was used for indicator of the reaction of fixation.

No tests were made without controls of the serum or cerebrospinal fluid for anticomplementary action and for natural antsheep amboceptor.

All antigens were tested as to the anticomplementary dose, as to fixation with a homologous serum, and as to nonspecific fixation with a heterologous serum.

The complement was a pool of the serum of from six to ten pigs in every set of tests. The serum from each pig had been tested before pooling for natural antsheep amboceptor, for specific fixation with each control antigen-and-serum-combination to be used in the tests, for hemolysis of 0.1 cc of a 5% suspension of sheep's erythrocytes with the Wassermann unit of antsheep amboceptor.

All readings were made when the controls of the hemolytic system and of anticomplementary reaction in serums, fluids and antigens were completely laked. The tubes with positive reactions were then replaced in the water bath for one hour to verify the accuracy of the reading. The reports were made on the first reading, but in most instances the reactions remained unchanged until the end of the hour.

As a further control of our work we have used spinal fluids and serums of patients with other diseases than poliomyelitis and also of normal individuals.

We have examined 152 spinal fluids and 60 blood serums. The ages of the poliomyelitis patients ranged between 2½ and 23 years. The cases were frank and suspected, in the febrile and afebrile stages. The duration of the disease was from one to forty days.

The result of the tests show that of 42 spinal fluids of frank and suspected cases of polio-

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 21, 1918.

myelitis, 23, or 53.5%, gave a positive reaction, 12 or 27.9%, gave a doubtful one and 4, or 9.5%, a negative reaction. When we take into consideration the fact that the doubtful reactions were associated with clinical symptoms and cytological and chemical reactions in the fluids, slowing unmistakably that an inflammatory process was going on in the meninges we must place some value on the results.

We have had only two blood specimens from patients with poliomyelitis, and both were negative to the poliomyelitis antigen. The spinal fluid of one of the cases was + and the other negative. Of course, no conclusion can be drawn from this.

In table I, we find seven cases recorded as negative. Two of these proved on necropsy to be tuberculous meningitis and another one showed a ++++ Wassermann in the spinal fluid and blood serum. The balance of 13 of the 55 polio myelitis spinal fluids were anticomplementary, probably because of long standing after removal or continuation.

Of 15 spinal fluids from cases of tuberculous meningitis (Table 2) 7 proved negative with the poliomyelitis antigen, 1+, 1++, 6 were anti-complementary.

Of 20 spinal fluids of cases of epidemic cerebrospinal meningitis (Table 3), 13 were negative, 3 doubtful and 4 anticomplementary.

Of 22 spinal fluids of cases of tertiary syphilis (Table 4) one gave a ++++ reaction with the polymycolitis antigen, 1+, 5+, 3 were anticomplementary and the rest negative. I might explain that the reason for the positive reactions was probably the fact that this particular antigen was filtered through a coarse filter allowing too much of the lipid substance to go through. This was avoided in all further work by using a finer filter and as seen on tables all other Wassermann positives gave a negative reaction with polymycolitis antigen.

Of 40 spinal fluids of normal and diverse pathologic conditions, one gave a ++++ reaction with the poliomyelitis antigen, 7 were anticomplementary, and the rest negative (Table 5).

Of 60 blood serums of various pathologic conditions (Table 6) none gave a positive reaction with the poliomyelitis antigen.

TABLE 1

S L F      0 F      S C      C S      P      L S      0 F      T M

N <sup>o</sup> term	Stem or m	Latin root	Crude	Gloss	g	Polysyllabic A 1	W or m	Tuber A 1	8 rep. green A 1	Mean 80 covers A 1
1	W h a e l l e m a s h y d o l e p n h a m p l e s p		M d i	e	+	+	+	+	+	+
2	M e s i a m	+	O i s e l e m i s i g n	+	+	+	+	+	+	+
3	D e l e p p	+	l e m i s i g n	+	+	+	+	+	+	+
4	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
5	P p e a l e r e r e d	+	l e m i s i g n	+	+	+	+	+	+	+
6	D e l e p p l y l	+	l e m i s i g n	+	+	+	+	+	+	+
7	M a s p r e i	+	l e m i s i g n	+	+	+	+	+	+	+
8	P r a p r i	+	l e m i s i g n	+	+	+	+	+	+	+
9	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
10	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
11	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
12	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
13	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
14	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
15	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
16	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
17	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
18	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
19	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
20	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
21	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
22	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
23	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
24	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
25	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
26	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
27	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
28	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
29	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
30	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
31	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
32	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
33	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
34	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
35	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
36	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
37	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
38	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
39	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
40	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+
41	M e s i a m	+	l e m i s i g n	+	+	+	+	+	+	+

TABLE 2																				
F	de	Cat	T	CVL	de	M	F	de	Cat	T	CVL	de	M	F	de	Cat	T	CVL	de	M

		M L	O	A	T	S
member	Class	Abraham	Glenn	George	Thomas	William
1	Glenn	++	++	++	0	0
2	Glenn	++	++	++	0	0
3	Glenn	++	++	++	0	0
4	Glenn	++	++	++	0	0
5	Glenn	++	++	++	0	0
6	Glenn	++	++	++	0	0
7	Glenn	++	++	++	0	0
8	Glenn	++	++	++	0	0
9	Glenn	++	++	++	0	0

TABLE 3

Number	Cells	Alb. cells	Glob. lin.	S. g.	F. Hem. t. per
1	Blood increase	+++	+++	+++	---
2	Gc. 1 large se	+++	+++	++	---
3	Blood 1 large se	+++	+++	++	---
4	Gc. 1 large se	+++	+++	++	---
5	C. 1 c. etc se	+++	+++	+++	---
6	Blood 1 large se	+++	+++	+++	---
7	Gc. 1 large se	+++	+++	+++	---
8	Gc. 1 large se	+++	+++	+++	---
9	Gc. 1 large se	+++	+++	+++	---
10	Gc. 1 large se	+++	+++	+++	---
11	Gc. 1 large se	+++	+++	+++	---
12	Gc. 1 large se	+++	+++	+++	---
13	Gc. 1 large se	+++	+++	+++	---
14	Gc. 1 large se	+++	+++	+++	---
15	Gc. 1 large se	+++	+++	+++	---
16	Gc. 1 large se	+++	+++	+++	---
17	Gc. 1 large se	+++	+++	+++	---
18	Gc. 1 large se	+++	+++	+++	---

TABLE 4

S	F	C	Cat	T	S	S	R	C	W
Number			26 gnos		W	sem		Polo	rel
1			C. lrasap. 1 huc		++	+			
2			C. unibac. 1 huc		+	+			
3			T. lra						
4			T. lra						
5			T. lra		+	+			
6			T. lra		+	+			
7			T. lra		+	+			
8			T. lra		+	+			
9			T. lra		+	+			
10			T. lra		+	+			
11			T. lra		+	+			
12			T. lra		+	+			
13			T. lra		+	+			
14			T. lra		+	+			
15			T. lra		+	+			
16			T. lra		+	+			
17			T. lra		+	+			
18			T. lra		+	+			
19			T. lra		+	+			
20			T. lra		+	+			
21			T. lra		+	+			
22			T. lra		+	+			
23			T. lra		+	+			
24			T. lra		+	+			
25			T. lra		+	+			
26			T. lra		+	+			
27			T. lra		+	+			
28			T. lra		+	+			
29			T. lra		+	+			
30			T. lra		+	+			
31			T. lra		+	+			
32			T. lra		+	+			
33			T. lra		+	+			
34			T. lra		+	+			
35			T. lra		+	+			
36			T. lra		+	+			
37			T. lra		+	+			
38			T. lra		+	+			
39			T. lra		+	+			
40			T. lra		+	+			
41			T. lra		+	+			
42			T. lra		+	+			
43			T. lra		+	+			
44			T. lra		+	+			
45			T. lra		+	+			
46			T. lra		+	+			
47			T. lra		+	+			
48			T. lra		+	+			
49			T. lra		+	+			
50			T. lra		+	+			

M NEUSTAEDTER AND E. J. BANZHAF

TABLE 5  
SPINAL FLUIDS OF MISCELLANEOUS CASES AND FIXATION WITH POLIOMYELITIS AND  
OTHER ANTIGENS

Num- ber	Diagnosis	Cells	Albu- min	Glob- ulin	Sugar	Poli- myel- itis Anti- gen	Was- ser- mann	Tuber- cle Anti- gen	Strept- ococcus Anti- gen	Meningo- coccus Anti- gen
1	Normal									
2	3. Meningitis	Normal			+++	—	—	—	—	—
3	Chilobirth					—	—	—	—	—
4	Cerebral					—	—	—	—	—
5	h. meningitis					—	—	—	—	—
6	Cerebral					—	—	—	—	—
7	h. meningitis					—	—	—	—	—
8	None					—	—	—	—	—
9	Normal	—	—	—	+	—	—	—	—	—
10	Normal	—	—	—	+	—	—	—	—	—
11	Normal	—	—	—	+	—	—	—	—	—
12	Normal	—	—	—	+	—	—	—	—	—
13	Staphylococcus meningitis	Great Increase	++++	++++	—	—	—	—	—	—
14	Brain abscess	Great Increase	++++	++++	Trace	—	—	—	—	—
15	Brain tumor	Great Increase	+++	+++	+	—	—	—	—	—
16	Tumor hypo- phylla	Great Increase	—	—	—	—	—	—	—	—
17	Epilepsy	—	—	—	—	—	—	—	—	—
18	Normal	—	—	—	—	—	—	—	—	—
19	?	Great Increase	+	+	+++	—	—	—	—	—
20	?	Normal	++	++	+++	—	—	—	—	—
21	Meningitis	Normal	+	+	+++	—	—	—	—	—
22	Meningitis	Normal Slight Increase	+	+	+++	—	—	—	—	—
23	Pertussis	Normal	+	+	+++	—	—	—	—	—
24	?	Normal	+	+	+++	—	—	—	—	—
25	Staphylococcus meningitis	Great Increase	+++	+++	+++	—	—	—	—	—
26	Meningitis	Slight Increase	+	+	+++	—	—	—	—	—
27	Brain tumor	Blood	++	++	+++	—	—	—	—	—
28	?	Great Increase	+++	+++	+	—	—	—	—	—
29	?	Great Increase	+++	+++	+++	—	—	—	—	—
30	Meningitis	Normal	++	++	+++	—	—	—	—	—
31	Meningitis	Normal	++	++	+++	—	—	—	—	—
32	Interstitial nephritis	Normal	—	—	+++	—	—	—	—	—
33	Pneumonia meningitis	Normal	—	—	+++	—	—	—	—	—

TABLE 6  
SHOWING FIXATION OF BLOOD-SERUM WITH VARIOUS ANTIGENS

Diagnosis	Poli- myelitis Antigen	Wass- ermann	Tuber- cle Antigen	Strepto- coccus Antigen	Meningo- coccus Antigen
Chorea	—	—	—	—	—
Tetanus	—	+++	—	—	—
Loes	—	+++	—	—	—
Poliomyelitis	—	—	—	—	—
Epidemic meningitis	—	—	—	—	—
Poliomyelitis	—	—	—	—	—
General paresis	—	—	—	—	—
Nephritis	—	—	—	—	—
Mania	—	+++	—	—	—
Constitutional inferiority	—	—	—	—	—
Mania	—	—	—	—	—
Cerebrospinal loes	—	+++	—	—	—
Cerebrospinal loes	—	+++	—	—	—
Arteriosclerosis	—	—	—	—	—
Cerebrospinal loes	—	+++	—	—	—
Tertiary loes	—	+++	—	—	—
Secondary loes	—	+++	—	—	—
Gout	—	—	—	—	—
Pleuritis	—	—	—	—	—
Suppurative meningitis	—	—	—	—	—
General paresis	—	—	—	—	—
Tertiary loes	—	+++	—	—	—
Cerebrospinal loes	—	+++	—	—	—
Cardiovascular disease	—	—	—	—	—
Leukemia	—	—	—	—	—
Nephritis	—	—	—	—	—
Normal	—	—	—	—	—
Polypuritis	—	—	—	—	—
Cardiovascular disease	—	+++	—	—	—
Cardiac disease	—	—	—	—	—
Normal	—	—	—	—	—
Hemiplegia	—	—	—	—	—
Suppurative meningitis	—	—	—	—	—
Cerebrospinal loes	—	+++	—	—	—
Poliomyelitis	—	—	—	—	—
Apoplexy	—	—	—	—	—
Nephritis	—	—	—	—	—
Normal	—	—	—	—	—
Leptothorax	—	—	—	—	—
Abortion	—	—	—	—	—
Frenzy	—	—	—	—	—
Loes	—	—	—	—	—
Gonorrheal arthritis	—	—	—	—	—
Cholelithiasis	—	—	—	—	—
Normal	—	—	—	—	—
Normal	—	—	—	—	—
Loes	—	+++	—	—	—
Nephritis	—	—	—	—	—
Brain tumor	—	—	—	—	—
Loes	—	—	—	—	—
Cardiovascular disease	—	+++	—	—	—
No diagnosis	—	—	—	—	—
Tetanus	—	+++	—	—	—
Hydrocephalus	—	—	—	—	—
Loes	—	+++	—	—	—
Meningitis	—	+++	—	—	—
Aortitis	—	+++	—	—	—
Poliomyelitis	—	—	—	—	+++
Alcoholism	—	—	—	—	—

Among the control fluids (Table 5) we notice a case diagnosed in Bellevue Hospital as one of interstitial nephritis, giving a +++ reaction with the poliomyelitis antigen and a negative

Wassermann This patient was 37 years old and had been only a few days in the hospital before he died. He complained of pain in the legs, his temperature ranged between subnormal and 101 F, patellar reflexes sluggish and achilles reflexes absent. At necropsy there was found interstitial nephritis, but the central nervous system was not examined. The examination of his spinal fluid was reported as containing four cells per c mm and the globulin as +, tests for albumen and sugar reduction not having been made. In view of these incomplete findings no conclusion can be drawn.

CONCLUSION

It would appear that an antigen has been found, which probably is specific and fixes complement, hence of positive diagnostic value in poliomyelitis. The result is in accord with the production of immune bodies in a horse injected with the poliomyelitic virus digested with trypsin as described.

THE EARLY HISTORY OF INFANTILE PARALYSIS<sup>1</sup>

By LOUIS C AGER, M.D.,  
BROOKLYN, N. Y.

THE startling nature of this disease and the extraordinary development in its virulence and epidemiology during the past twenty-five years have created a dramatic interest in it out of all proportion to its statistical importance. As a logical sequence many reams of paper have been consumed in its discussion in all kinds of publications, from the yellow journal to the laboratory report. In spite of this, very little attention has been given to the earliest references to this disease entity and most writers have perpetuated the error that Michael Underwood described it in 1784. Under the circumstances, a brief summary of a careful search of early medical literature is excusable, although its results are largely negative. As the period after Heine was reviewed in a most masterly manner by Dr. Mary Putnam Jacobi<sup>1</sup> in 1873, it will not be discussed in this paper.

1 ERRONEOUS STATEMENTS

Some writers would have us believe that the deformities of various men and women mentioned in the Bible and in history were due to poliomyelitis, although it is manifestly impossible to make a differential diagnosis from such sources of information, and in many instances

<sup>1</sup> Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 21, 1918.

we know that injuries were responsible. The most frequently cited case is that of the Duc de Maine, son of Louis XIV. The letters of Madame de Maintenon have been referred to in substantiation. The following quotations from her letters<sup>1</sup> prove conclusively that the little prince had a chronic infection of some kind, probably a tubercular hip.

July 4th, 1674 "The Duc de Maine is always sick, and I do not know what to think, it is always a terrible thing to see those whom we love suffer."

About two weeks later "The Duc de Maine is an object of pity. He has the double quartan fever and severe cold, and an abscess has opened which gives him great pain."

In December "He had a fever yesterday, although it was his day of intermission."

May 8, 1675, he was again ill and was taken to the baths, and after some months recovered, but was lame the rest of his life.

Michael Underwood's "Treatise on the Diseases of Children," published in 1784,<sup>2</sup> is commonly referred to as containing the earliest description of infantile paralysis. I have not been able to find a copy of this first edition of this famous work. In the second edition, 1793, under the heading, "Debility of the Lower Extremities, there is clear description of tuberculous of the vertebrae and hip. He says, "It may be due to scrofula," and "I was lately informed by a gentleman of character, ———, that in one instance autopsy showed caries of the vertebrae." However, in the large fourth edition, 1799, there is an exceedingly interesting addition, consisting of a section on "Paralysis and Wasting of the Limbs." Although the author does not always differentiate sharply between cerebral palsy and spinal paralysis, there are certain passages that indicate that he is writing of something quite different from the condition described in the other chapter. On page 111 he says that palsy is a more common disease than is generally recognized, and goes on as follows:

"It occasionally seizes the upper extremities. It occasionally takes away the entire use of the limbs it has attacked but in others it only weakens them. Sometimes the speech is affected but there is no morbid change of parts has taken place. Perhaps infants and young children are oftener perfectly cured than those more advanced in years." Again "I have noticed a few instances of a partial paralysis of one or all extremities but this has always given way very soon." "Besides teething infants whom it has been said to attack I have seen it in others who are the finest children, and it is generally attended with a foul stage of the bowels." "Electricity, I am told, has been advised in one instance and may be properly used if the complaint should not otherwise yield."

From these quotations it is quite evident that Underwood had not recognized an acute infectious disease in children causing more or less temporary paralysis, in 1784, but that by 1799 he had become very familiar with such a condition. This, it must be remembered, was in England.

#### NEGATIVE FINDINGS

In 1700 Theophrastus Bonetus published in Leyden his fascinating work on pathology in two beautiful volumes under the title "Sepulcratum Sive Anatomicæ Practicæ." Volume I contains a section on convulsions and another on paralysis, with numerous autopsy records. Although he speaks of convulsions and loss of motion during teething it seems quite evident from his case histories that he was referring to cerebral palsy. He describes quite clearly various types of meningitis, but even among children violence appears to have been the chief cause of death, in his cases.

In 1702 the Royal Academy of Sciences of France began to publish its annual Memoirs, and a few years later there was included an annual health report. Epidemic diseases were particularly mentioned. In the volume of 1746<sup>3</sup> apoplexy and paralysis are discussed, and there is an interesting reference to some form of migratory and recurrent paralysis.

In 1761 Boerhaave<sup>4</sup> issued an extensive treatise in two volumes on diseases of the nerves. The section "De Paralyti" is largely devoted to apoplexy and brain and nerve injuries, but there is one statement of possible significance. He says that he has heard that in Asia a peculiar type of paralysis is frequent, which is said to be produced by cold. This will be mentioned again.

In 1778 Tissot<sup>5</sup> issued an elaborate four volume work on diseases of the nerves. The only reference that could be mistaken for poliomyelitis refers to diseases of the nerves following the acute infectious diseases, particularly whooping cough, but paralysis is not mentioned. Moreover, he speaks of the "acute humor" of whooping cough becoming a "chronic malady," which of course, indicates tuberculous. In Volume IV there is a brief section on teething, and also on worms in relation to convulsions, but paralysis is not mentioned.

In 1803 Portal<sup>6</sup> published a large work on pathological anatomy, with considerable space devoted to lesions of the cord but there is nothing that in any way suggests poliomyelitis.

In 1789 and again in 1805 Brumes<sup>7</sup> issued a work of 500 pages on convulsions in infancy. Various epidemic forms of disease are discussed, but there is no mention of anything resembling acute infantile paralysis.

John George Heine, the "father of orthopedics" and the uncle, Jacob Heine, does not

appear to have contributed anything to medical literature, but his bombastic associate, Jorg,<sup>10</sup> wrote several treatises on the care of children, and in 1810 issued a small volume on deformities of man, without giving any evidence of having seen cases of poliomyelitis. According to Romer<sup>11</sup> it was Jorg who first described epidemic infantile paralysis in 1816. Romer's curt dismissal of the Englishmen, Underwood and Badham, as not really having seen the disease at all, is quite typical of the Germanic mind. He quotes Jorg's description at length and quite evidently had never seen the writings of Underwood or Badham. Even if we accept Jorg's case, it merely emphasizes the fact that the disease in question had not been recognized on the Continent before that time.

### POSITIVE FINDINGS

In 1761, in the passage already referred to, Boerhaave showed considerable interest in the report that a certain form of paralysis, said to be due to cold, prevailed in some parts of Asia.

Underwood did not know the disease in 1784, but in 1789 he described it quite clearly.

In 1823 Shaw<sup>12</sup> published in London his interesting little work on orthopedics. In speaking of the causes of the deformities that he had seen, he says "But certain paralytic affections of the muscles are sometimes so instantaneous that we must consider them upon the change which has suddenly taken place in the brain or spinal marrow or in the nerve which supply the affected parts. *I have been told that such sudden attacks have been common among children in India and that strong and healthy children are more frequently affected than those of a weakly constitution*" He also cites the case of a young man under his care who had the disease in India in infancy. As his book was published in 1823, it is reasonable to draw the conclusion that the disease was common enough among Anglo-Indians to be recognized by the laity very soon after 1800.

In 1828 Abercrombie<sup>13</sup> reported a typical case, with autopsy, of acute respiratory paralysis in a healthy child of two years.

The next important article was Badham's<sup>14</sup> classical report of four typical cases seen in the acute stage in one small community in England. This short report is repeatedly referred to, but apparently few writers have taken the trouble to read it. It is important for two reasons. First, it is the first recorded instance of a group of cases suggesting transmissibility, and may therefore be considered the first epidemic, although Holt<sup>15</sup> did not include it in his tabulation of epidemics. Second, Heine cited this report as the direct cause of his systematic study of the disease. Badham's paper was entitled "Paralysis

in Childhood. Four Remarkable cases of Suddenly Induced Paralysis in the Extremities, Occurring in Children Without Any Apparent Cerebral or Cerebro-Spinal Lesion." In the first case there was marked thirst and drowsiness for two days before the paralysis. The child went to bed normal and in the morning the mother noticed that the eyes were turned inward, and the child could not stand. One week later the acute symptoms had cleared up, but strabismus was present and there was complete loss of motion in the right leg and partial loss in the left. There was no wasting and no lowering of local temperature at this time. The strabismus disappeared a few days later. Five weeks later "The temperature of the limb is considerably below that of the other and loss of substance has proceeded to a considerable extent. She no longer drags the limb after her as she did at first, but projects or flings it forward with a jerk, the direction and force of which she seems to have not the slightest power to control." The other cases were quite similar. Dr. Badham closed his paper with an appeal for suggestions as to the cause of the disease and its proper treatment. His closing sentence is worthy of careful consideration at the present time. "But I am unwilling to disturb the digestive and nutritive functions in such young subjects, and would rather count on those important processes as my auxiliaries than venture on equivocal remedies which may, or rather must, depress them."

This brief review brings us up to the work of Heine, and only one later writer will be quoted. In 1852 Goodeve<sup>16</sup> published a brief volume for the parents of Anglo-Indian children. This first edition does not speak of paralysis, but in the large edition of 1879 refers to it as a common and not serious condition.

### CONCLUSIONS

1 Some form of paralysis of unknown origin was sufficiently common in Asia to have attracted the attention of Boerhaave before 1761.

2 Infantile paralysis appeared in England some time between 1784 and 1799, judging from the writings of Underwood.

3 It did not appear on the Continent until fifteen or twenty years later.

4 The disease prevailed to some extent among Anglo-Indian children about 1800, if not earlier, and its victims returned to England at least as early as that date.

Although the evidence is by no means conclusive, it seems reasonable to accept the theory that acute infantile paralysis—poliomyelitis—existed in India and Asia originally, and was brought to England by Anglo-Indians and then transmitted to the Continent.

# REFERENCES

- 1 *Am Jour Ob and Dis of W and Chil*, May 1874
- 2 *Memoirs et Lettres* 15 Vol Mirestrecht 1789
- 3 *Treatise on Ds of Child*, 2d Ed, Lond 1793
- also Ed 1799
- 4 *Sepulchretum Sive Anatomia Practica*, Leyden 1700, Vol I Sec 2
- 5 *Histoire des malades observees a Paris* 1746, *Memoirs de Mathematique et de Physiciens*, *Histoire de l'Academie Royale des Sciences* 1747 p 563
- 6 *De Morbus Nervorum* Leyden 1761
- 7 *Truite des Nerves et leur Maladies* Paris 1778
- 8 *Cours d'Anatomie Medical* Paris 1803 Vol IV p 111
- 9 *Traite de Convulsions dans l'Enfance* Paris 1805
- 10 *Über die Verkrümmungen des menschlichen Körpers* Leipzig 1810
- 11 *Epidemic Infantile Paralysis* London 1913
- 12 *Distortions of the Spine* London 1825
- 13 *Path and Practical Researches on Dis of the Brain and Cord* Edinburgh 1828
- 14 *London Med Gazette* Vol XVII 1835 p 215
- 15 *Treatise for Parents* 1879

## SOME OBSERVATIONS ON THE CHEMICAL EXAMINATION OF THE BLOOD AND URINE IN NORMAL PREGNANCY AND IN TOXEMIA OF PREGNANCY \*†

By JOSEPH R LOSEE, MD  
NEW YORK CITY

IN the last few years marked advances have been made in the development of analytical technic. Biochemical research has added many new methods which have gained an important place in the daily routine of the clinical laboratory both as an aid to diagnosis and as an aid to the better treatment of disease. The conditions in which these methods have had their greatest range of usefulness has been in nephritis and diabetes, and it was with the hope of throwing more light on the mechanism of toxemia of pregnancy and to determine its value when applied to clinical obstetrics that this investigation was undertaken. However, we soon found that a complete chemical examination of the blood and urine was too large an undertaking with the assistance and time at our command, and such problems as the estimation of sodium chloride, cholesterol and uric acid in the blood, will have to be taken up in a later communication. In the meantime perhaps, a more accurate technic may be developed for some of these. The work which is here reported comprises the determination of the blood urea, creatinin and sugar, the carbon dioxide combining power of the blood plasma, and the estimation of the total nitrogen and percent of it as ammonia and urea nitrogen of the urine. In addition from these estimates we have determined the McLean Index.

Ambard<sup>1</sup>, and more recently McLean, have attempted to show a constant relationship between the urea of the blood and urine when determined under certain conditions. They have developed a formula and decided that the index of urea excretion is constant for normal individuals, but that variations exist in proportion to renal insufficiency. Other observers, and among them Addis and Winternitz,<sup>2</sup> do not agree with the conclusions arrived at by Ambard and McLean, and consider other factors than urea concentration are important in determining the rate of urea excretion by the normal kidney. One of the chief advantages in determining the index of urea excretion lies in the fact that it is unnecessary to know the exact amount of protein intake in order to estimate the functional capacity of the kidney. In busy hospital practice this method can be applied to several patients at the same time, whereas the older method of knowing exactly the intake, and the collection of twenty-four hour specimens entailed a great deal of personal attention.

## METHOD OF COLLECTING SPECIMENS

The technic employed in the collection of the specimens of the normal and pre-eclamptic cases was almost identical with that suggested by McLean. They were all obtained late in the morning, that is, about four hours after a breakfast which consisted of fruit, a cereal and eggs or hash. One-half hour before the period began the patient drank 150 cubic centimeters of water, and thereafter took no more fluid or food until after the observation period was ended. The bladder was emptied either voluntarily or by catheter if necessary at the beginning of the period and again in seventy-two minutes. From the amount so obtained, an estimate was made of the total quantity secreted in twenty-four hours. Thirty-six minutes after the bladder was emptied the first time, twenty cubic centimeters of blood were aspirated from the arm vein and ten cubic centimeters placed in each of two centrifuge tubes which contained 100 milligrams of powdered potassium oxalate and thoroughly mixed to prevent clotting. From this specimen the urea determination was made and gave us as nearly as possible the urea concentration of the blood at the time the urine was secreted.

## TECHNICAL METHODS

The total nitrogen of the urine was determined by the well known Kjeldahl method and the urea and ammonia by the use of urease as described by Van Slyke and Cullen.<sup>4</sup> By this latter method it is possible to make a complete nitrogen partition of the urine in less than two hours and it is therefore of more advantage to the clinician than some older methods especially that of the determination of ammonia by the Schlosing method which takes four days to complete. The

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 2, 1918.  
†From the Laboratory of the New York Lying In Hospital.

blood urea was also determined by the use of urease. The creatinin of the blood was estimated according to the method of Myers and Fine. The sugar concentration was determined by the well-known Lewis and Benedict method, and the carbon dioxide content of the plasma by the VanSlyke apparatus. The calculations were made in most instances in grams per litre and milligrams per 100 cubic centimeters. The McLean Index is calculated by multiplying the grams urea excreted per twenty-four hours by the square root of the grams of urea per litre by 8.96. This total, divided by the weight of the patient in kilograms, multiplied by the square of the blood urea per litre, equals the Index, which is 100 or more in normal individuals.

The cases were all selected from the wards of the hospital and classified according to their clinical manifestations into four groups, normal pregnancy, pre-eclampsia, eclampsia and pernicious vomiting.

nephritis from a cause other than toxemia of pregnancy, or they may be, as the term indicates, in a pre-eclamptic stage. It is impossible to say, however, whether or not prompt treatment averted complications, such as convulsions and coma in these cases.

The eclamptics were emergency patients who had many convulsions, were comatose and presented all the clinical features of this type of case. In some the blood was drawn immediately after a convulsive seizure, and in others some time afterward, when the patient was in coma, due either to toxin or to toxin and morphine.

The cases included in the series of pernicious vomiting were all two to four months pregnant and came to the hospital with a diagnosis of pernicious vomiting. After a few days observation they were differentiated into the real and pseudo types of this disease. Under the latter may be classed the reflex and neurotic types and other conditions in the abdomen giving rise to these symptoms.

No 1

## NORMAL PREGNANCY

HISTORY	URINE							BLOOD					McFARLANE INDEX
	Total N gm per 100 c c	Per Cent of Total N as			Gms Urea per lit	CC in 24 hours	Gms Urea 24 hours	Urea N mg per 100 c c	Creat'n mg per 100 c c	Sugar, per cent of	CC of CO <sub>2</sub> bound by 100 c c of plasma	Urea gms, per lit	
		Urea	Ammonia	Undetermined									
1 M A	0.280	91.7	8.2	0.1	5.50	3,600	19.80	13.0	1.70	0.083	52.2	276	94
2 C S	0.320	79.1	8.3	12.6	5.32	5,400	28.72	8.4	1.90	0.079	50.4	180	258
3 J K	0.440	85.4	5.4	9.2	8.05	3,400	27.37	13.4	2.2	0.10	56.7	288	120
4 L M	0.31	87.1	5.0	7.9	5.78	4,600	26.59	11.4	1.4	0.075	49.4	244	132.2
5 J M	0.34	78.8	4.7	16.5	5.52	4,000	22.08	11.5	1.1	0.087	54.1	256	119.7
6 L F	0.76	71.6	6.6	22.8	11.86	2,900	34.39	14.6	1.5	0.065	52.6	314	185
7 M M	0.62	80.8	3.8	15.4	10.73	1,900	20.39	10.7	1.1	0.07	54.5	230	184
8 A M	0.42	81.2	3.1	15.7	7.30	4,700	34.31	16.3	1.65	0.097	51.3	350	104.6

The normal cases were young primipara in the ninth month who were walking about and who presented no abnormal symptoms. The urine was negative for albumin and casts and no case was examined which had oedema, headache or a systolic blood pressure over 130. More than one qualitative urine examination was always made before the case was selected, for it has occurred to me that the slightest trace of albumin, if repeatedly found in a pregnant woman who has never shown albumin before, signifies that some form of toxic agent is at work.

The pre-eclamptics were women seven to nine months pregnant, who were admitted with generalized oedema, vertigo, eye symptoms, hypertension and a large amount of albumin and many granular casts in the urine. The classification of pre-eclampsia is used in this connection for want of a better term. Some of these cases may have had a chronic nephritis which has been activated by the toxin of pregnancy, or they may be a

A comparison of the total nitrogen figures with those obtained in the healthy non-pregnant adult on a general diet, shows that they are somewhat lower. The urea and ammonia fractions of the total nitrogen vary little from the normal, and the total amount of urea voided in twenty-four hours was normal in most cases. The urea nitrogen of the blood may be considered lower than that observed in the normal non-pregnant individual, although these latter statistics vary with the various workers. Thus Gettler and Baker<sup>5</sup> in a series of thirty normal individuals obtained fifteen to twenty-five milligrams per 100 cubic centimeters of blood, in another series Folin and Denis<sup>6</sup> obtained twelve to twenty-seven milligrams, and Myers and Fine<sup>7</sup> obtained twelve to fifteen milligrams. Folin<sup>8</sup>, in a recent article, mentions that he has found a much lower urea nitrogen content in the blood in normal pregnancy than in normal human blood. In a series of about one hundred cases he found that they ran between five and nine milligrams per 100

cubic centimeter. He does not state at what stage in their pregnancy these observations were made, but mentions that the investigation along these lines is being continued. I cannot account for the great variation between Folin's figures and my own, inasmuch as the examinations were always made in duplicate and from time to time a check was made by another responsible

laboratory. He endeavors to explain the low blood urea by saying that there probably is a higher proportion of amino acids and other similar products in the blood in pregnancy in order to supply the nitrogenous food for the growing fetus. He also suggests that the pregnant organism may be more susceptible than others to the toxic effect of certain waste products, and

No 2

## PRE ECLAMPSIA

HISTORY	URINE							BLOOD					McL. INDEX
	Total N gm per 100 c.c.	Per Cent of Total N as			Gms Urea per lit.	C.C. in 24 hours	Gms Urea 24 hours	Urea N mg per 100 c.c.	Creatinine mg per 100 c.c.	Sugar per cent of	C.C. of CO <sub>2</sub> combined by 100 c.c. of plasma	Urea gms per lit.	
		Urea	Ammonia	Unidentified									
9 C C Oed B P 236 Det Ret Spec 1 A P Spec 2 P P Spec 3 P P	1.54 0.24 0.68	51.3 68.3 70.0	3.9 1.7 3.5	44.8 30.0 26.5	16.01 3.51 10.01	360 9200 2600	576 32.29 26.04	31.3 21.0 15.4	12.5 2.2 1.9	0.09 0.07 0.081	46.4 51.2 50.4	670 450 330	7 39 126
10 S K B P 218 Oed Spec 1 A P Spec 2 A P Spec 3 3 wk P P	1.16 0.86 0.34	80.3 66.5 73.0	1.1 2.1 4.1	18.6 13.4 22.9	19.96 12.25 5.27	1300 500 4600	25.95 6.13 24.24	23.3 26.1 14.2	1.6 2.2 2.0	0.083 0.07 0.09	54.0 48.5 57.0	500 560 304	73.5 20 106
11 E P B P 190 Oed Vert No 1, A P No 2 A P	1.10 1.66	54.1 61.3	3.8 2.5	42.1 36.2	12.74 28.80	640 640	8.13 13.95	14.9 22.6	1.81 2.7	0.09 0.11	49.1 50.4	320 484	41.5 39
12 C S Oed No Conv	0.60	67.2	5.0	27.8	8.7	1560	13.57	16.4			49.3	342	45.9

No 3

## ECLAMPSIA

HISTORY	URINE							BLOOD					McL. INDEX
	Total N gm per 100 cc	Per Cent of Total N as			Gms Urea per lit	C.C. in 4 hours	Gms Urea 4 hours	Urea N mg per 100 cc	Creatinine mg per 100 cc	Sugar per cent of	C.C. of CO bound by 100 cc of plasma	Urea gms per lit	
		Urea	Ammonia	Un- identified									
13 S S P P type Conv Coma Died	0.62	42.9	13.7	43.4	570	822	476	17.5	2.4	0.16	51.3	376	21.1
14 F T Conv B P 120 Spec 1 A P Spec 2 7 days P P	0.62 1.82	47.8 71.4	8.3 1.6	43.9 27.0	287 2785	3500 800	10.04 22.28	13.3 22.9	1.20 1.4	0.071 0.065	33.4 57.0	268 492	25.5 66
15 A Z Conv Coma	1.74	47.3	14.5	38.2	17.65	400	7.06	21.1	3.15	0.13	40.9	442	21
16 B S Conv Coma	1.73	51.8	5.0	43.2	19.20			21.0			36.9	50	
17 T L Conv Coma Spec 12 hrs aft conv	0.75	55.7	11.1	33.2	8.78	2400	20.88	19.6			61.5	420	46.4

No 4

## PERNICIOUS VOMITING

HISTORY	URINE					BLOOD
	Total N gm per 100 c c	Per Cent of Total N as			Total acetone bodies calculated as B. Oxibuty- ric gms per lit	C C of CO <sub>2</sub> bound by 100 c c of plasma
		Urea	Ammonia	Unde- termined		
18 R G 4 mos preg Vom 4 wks Rectal feeding, Spec No 1	100	59.5	19.0	21.5		39
No 2	166	61.5	22.1	16.4		38.1
19 R P Vom 5 wks	0.915	38.4	36.0	25.6	28.30	56
20 G S 3 mos Pseudo type	2.15	72.0	12.35	15.60	21.00	62.2
21 M C 2 mos Pseudo type	1.79	72.60	8.05	19.35	3.10	52.8

in self-defense may be compelled to keep these waste products, including urea, at a subnormal level. It has been conclusively demonstrated in a former paper by VanSlyke and the writer<sup>9</sup> that there is not an increase of amino acids in the blood in normal pregnancy or toxemia of pregnancy.

The creatinin and sugar in the blood are practically the same as in normal patients. The carbon dioxide combining power of the blood plasma has already been shown to be below the average normal in a former paper by VanSlyke and the writer<sup>9</sup>. The McLean Index of urea excretion in this series is normal.

Of the pre-eclamptic cases, only four were examined, and it will be observed from the tables that the per cent of urinary nitrogen in the form of urea is definitely lower and that the urea nitrogen of the blood is somewhat higher than in normal pregnancy. Although the urea nitrogen of the blood is increased, it does not seem sufficient to account for the low output or the gravity of the symptoms. Case 9 was a very sick patient, with severe clinical symptoms, including marked general oedema, systolic blood pressure of 238, albuminuric retinitis and a partially detached retina in one eye, yet two examinations of the blood ante-partum and at the height of the symptoms only showed a blood urea nitrogen of thirty-one and twenty-one milligrams per 100 cubic centimeters respectively. The second examination was made twenty-four hours after treatment had begun.

The creatinin and sugar in the blood in these cases were normal and the carbon dioxide combining power was the same as in normal pregnancy. The McLean Index of urea excretion

was lower than normal, and it will be observed from the tables that one week after delivery the Index again rose to a normal level.

In eclampsia the per cent of urinary nitrogen in the form of urea is much less than that found in normal pregnancy and also lower than that observed in the cases of the pre-eclamptic type. In a series of thirteen cases the urea nitrogen of the blood was from ten to twenty-six milligrams per 100 cubic centimeters, which is practically normal. These figures are sufficient to prove that the convulsions are not due to an intoxication of the blood and tissues with urea. There is, therefore, not as much urea formed during this period of convulsions and coma as under normal conditions, which may be due to the destructive process going on in the liver in this disease. In what form does the nitrogen exist in the blood? It is also a fact that many cases of eclampsia are of short duration, but even in cases of three or four days coma and suppression of urine, the urea nitrogen in the blood is not increased.

It is interesting to compare the urea nitrogen figures in the blood of eclamptics and in the blood of interstitial nephritis with uremia. These have long been clinical conditions which have been difficult to diagnose definitely, and oftentimes a final diagnosis is not made until at autopsy, where the typical hepatic lesions settled the differences. Of course, given a young woman seven to nine months pregnant who is admitted with convulsions, solid albumin and casts in the urine, an elevation in the systolic blood pressure and other symptoms usually associated with an eclamptic seizure, most any of us would make a diagnosis of eclampsia, and we would be correct.

in the greatest majority of cases. Yet there is always the possibility that we are dealing with a uremia. It is here that the chemical blood examination will help to confirm the diagnosis, for whereas in eclampsia we have a normal or slightly elevated urea nitrogen, in interstitial nephritis and uremia the urea nitrogen of the blood will be from 60 to 300 milligrams per 100 cubic centimeters. The creatinin in the blood in eclampsia is normal and in uremia it runs as high as thirty-three milligrams (Myers and Fine<sup>10</sup>). In several blood examinations on eclamptics, one case only showed a high urea nitrogen. This patient died and no autopsy was permitted. However, we are carefully following up the cases, with the hope that in the near future we shall be able to substantiate the blood findings at the autopsy table.

According to the tabulated reports of many investigators, the urea nitrogen of the blood in chronic and acute parenchymatous nephritis is normal or very slightly elevated. The kidney of the eclamptic is very similar to the kidney of acute parenchymatous nephritis, and the chemical blood examination is also similar. Inasmuch as it was impossible to obtain a time specimen of urine in many of these cases, the McLean Index could not be correctly calculated. Of those, however, on whom it was calculated, all were sub-normal.

Case 17 is interesting, inasmuch as the urine was obtained twelve hours after the last convulsion and after the patient had been given two grams of morphine. In this instance 120 cubic centimeters of urine were secreted in seventy-two minutes, and shows that the kidney was actively secreting, even after a large dose of the hypnotic. The index was 46.4.

The carbon dioxide combining power of the blood plasma was practically the same as in normal pregnancy, and it no time reached a level indicative of acidosis.

In the real pernicious vomiting case we were concerned with a severe type of toxemia, and all methods of diagnosis, both laboratory and clinical, should be made as quickly as possible. The destruction of the liver is so extensive in some of these cases that irreparable damage is often done while the patient is still under observation. Of the various examinations made of both the blood and urine of the few cases tabulated, a high ammonia coefficient was the only determination which was sufficiently abnormal to be of any assistance. Many workers do not agree on this fact and consider that a high ammonia is also found in a fasting urine, which is quite true, but the ammonia of a fasting urine is not as marked as that of a vomiting case.

Case 18 was four months pregnant and presented clinical signs of a severe toxemia. The ammonia coefficient of the urine was nineteen and twenty-two per cent of the total nitrogen and the urea nitrogen of the blood was from seven-

teen to twenty-two milligrams per 100 cubic centimeters. The carbon dioxide combining power of the blood plasma was low, but it was not as marked as is observed in diabetic coma.

#### CONCLUSIONS

1. In the diagnosis of eclampsia a large amount of albumin in the urine and a normal blood urea are the most significant laboratory findings.

2. We do not know where the toxin of the toxemia of pregnancy is formed, but we do know that neither nitrogenous products nor any other waste products can be held in the slightest degree responsible for the symptoms.

3. Whereas, modern biochemical technic is of great scientific interest and has marked clinical value in some diseases, and, whereas, it has disproved such theories as the acidosis, the amino acid, and nitrogen retention as a cause of toxemia of pregnancy, it affords us little assistance in the daily routine of clinical obstetrics.

I wish to thank Dr. Donald D. VanSlyke for his advice and assistance in carrying on this work.

#### BIBLIOGRAPHY

1. Ambard, L. *Compt rend Soc de Biol* 1910 *lxix* 411, 506.
2. McLean *Jour of Experimental Med* 1915 *xxii* 212.
3. Addis and Watanabee *Jour Biol Chem* 1916 *xxii* 203.
4. Van Slyke and Cullen, *Jour Biol Chem*, 1914 *lxix* 211.
5. Gettler and Baker, *Jour Biol Chem* 1916 *xxv* 211.
6. Folin and Denis, *Jour Biol Chem* 1913 *xiv* 29, 1914 *xvii* 487.
7. Myers and Fine *The Post Graduate* New York 1914 1915.
8. Folin *Jour of Amer Med Assn* 1917 *lxix* 1209.
9. Losee and VanSlyke *Amer Jour of Med Scien* 1917 *clm*, 94.
10. Myers and Fine *Jour Biol Chem* 1915 *xx* 391.

#### The Medical Directory of New York, New Jersey and Connecticut

As copy for Vol XX of the Medical Directory is now ready to go to the printer physicians desiring changes in address telephone number or other data should send them at once to the Committee on Publication.

Physicians knowing of any errors in last year's Directory are also requested to send them to the Committee as the value of the Directory depends upon its accuracy, and it should be the duty as well as the pleasure of all who use the book to assist in making it as perfect as possible.

MEDICAL SOCIETY OF THE STATE OF NEW YORK  
17 West 43d Street

the various preventive measures for certain communicable diseases

The chapters on air, water and water supply are very complete. The author still adheres to the opinion of the exaggerated importance of the amount of carbon dioxide in the air and does not seem to acquiesce in the now generally accepted opinion of the paramount importance of temperature and humidity in the air.

In the chapter on Food and Dieting it would be well if the author had added more details about the caloric value of foods, etc.

In the chapter on Industrial Hygiene, the statistical data taken from Ogle are rather antiquated and should be replaced by data gathered abroad and in the United States, notably, Bertillon, Tatam, Hoffman, and others.

The chapters on Military and Naval Hygiene could have been amplified in view of the present world war.

These are but very slight defects in an otherwise splendid exposition, in a brief, concise and simple language, of the principles of hygiene by Dr Bergey.

G M P

**SOCOPOLAMINE-MORPHINE, SEMI-NARCOSIS DURING LABOUR.** By WILLIAM OSBORNE GREENWOOD, M.D. (Leeds) B.S. (Lond.) 120 pp., 12mo. Henry Frowde, Hodder and Stoughton, Oxford University Press, 35 West 32nd Street, New York. 1918. Price, \$2.00.

The author makes a clean distinction between analgesia and amnesia, to say nothing about anesthesia, and insists that he is after the amnesia only. It is entirely unnecessary to induce a narcosis, and even analgesia is undesirable. All the work which has recently been done by American anesthetists in perfecting the Gas-Oxygen technic seems to be unknown to him, for, on page 22 one reads "At the present moment the choice of an anesthetic in midwifery lies between chloroform and scopolamin-morphine." The value of the exposition lies in the thoughtful discussion of the necessity of individualizing the method, and in the careful narration of more than a score of cases. In over 200 cases no uterine inertia was encountered, nor is there a record of any case of oligopnea unless the technic was faulty. Of paramount importance is recognized the fact that the mother invariably recovers without shock or exhaustion. The book would be a real help to one who had not yet formulated his notions of procedure in this class of practice, and who could not obtain the services of an experienced practitioner to administer the Gas-Oxygen, and who had not learned to use this method at the proper time during the long first stage.

A F E

**CHEMICAL PATHOLOGY.** A Discussion of General Pathology from the Standpoint of the Chemical Processes Involved. By H. GIDEON WELLS, Ph.D., M.D., Professor Pathology University Chicago, and Rush Medical College Chicago. Third Edition, revised and reset. Octavo 707 pages. Philadelphia and London W B Saunders Company, 1918. Cloth, \$4.25 net.

This new edition of this well-known work on pathology from the chemical viewpoint has been largely rewritten and brought up to date. For the benefit of those who may not be familiar with the previous editions, we may say that it is a comprehensive digest of the literature bearing on the biological or physiological chemistry of the body, and the chemical processes taking place therein in both health and disease. It discusses the chemistry and physics of the cell, the enzymes, tumors, internal secretions, degenerations, immunity toxins, toxemias, autointoxications, metabolism and such diseases of metabolism as gout, diabetes, acid intoxication, deficiency diseases, etc.

Each subject is treated with brevity, and yet with sufficient fulness to give a clear idea of the subject. There is no tedious discussion of elaborate theories, but a plain statement of facts drawn from original sources. The book is replete with reliable information on a great variety of subjects of importance to the clinician.

It is a valuable book of reference because of the very full list of references to the literature and a very complete index covering thirty-four pages.

It is a book that should be in every physician's library and should be read in connection with all studies in pathology.

E H B

**DIFFERENTIAL DIAGNOSIS.** Presented Through an Analysis of 317 Cases. By RICHARD C. CABOT, M.D. Asst. Prof. Clinical Medicine, Harvard Medical School, Volume II, Second Edition. Octavo of 709 pages, 254 illustrations. Philadelphia and London W B Saunders Company, 1918. Cloth, \$6.00 net.

The appearance of the author's first volume on Differential Diagnosis was an innovation in the method of presenting the subject of diagnosis. No comment is needed upon its value. So new was the method of instruction, and so complete were the histories of the cases presented, with the discussions, that this volume was eagerly sought by all interested in medicine. Volume II followed as a necessary addition or supplement to Volume I, and discussed many matters of clinical importance not mentioned in the first volume.

This second edition of Volume II, after several reprints of the first edition, which is published because of the demand for this thorough, painstaking and clear exposition of a difficult subject by the author, retains all of the first edition and has had added to it new deductions and thoughts from Dr. Cabot's vast experience upon arterio-sclerosis and some of the more complicated abdominal symptoms. The reviewer feels, however, that after longer consideration the author will recognize that his comment upon the so-called shell-shock does not add greatly to the value of his scientific observations.

This volume is, as we all know, an excellent work and should be in the library of each one who studies his cases carefully.

The typographical work of the book is excellent, the paper is the best, the type large, clear, and easily read, the illustrations could not be improved.

HENRY M. MOSES

**LECITHIN AND ALLIED SUBSTANCES, THE LIPINS.** By HUGH MACLEAN, M.D., D.Sc., Lecturer on Chemical Pathology, St. Thomas' Hospital, London. Longmans, Green and Co., 39 Paternoster Row, London. Fourth Avenue and 30th Street, New York, Bombay, Calcutta, and Madras. 1918. Price, \$2.25 net.

This is one of the very valuable monographs on Biochemistry being issued by these publishers. The author has undertaken to collect in this small monograph of 206 pages what is known, from the chemical standpoint, on the subject of the lipins. The literature of this subject has become very much confused, owing to the lack of uniformity in the nomenclature and classification. Same substances have been described which on more careful study are believed to be either mixtures or decomposition products.

Dr. Maclean has endeavored to clear up these uncertainties, and has given the best methods known for extracting and purifying them. He also presents a complete bibliography and good index.

E H B

## Deaths.

FREDERIC A. ANDERSON, M.D., Massena, died May 22, 1918.

JOSEPH M. CRAMER, New York City, died July 28, 1918.

MORRIS J. KARPAS, New York City, died July, 1918.

ENOCH P. LAWRENCE, Flushing, died July 26, 1918.

FRED C. RICE, Ripley, died June 21, 1918.

CHARLES W. SANDERS, New York City, died July 22, 1918.

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M D Editor  
FLOYD MILFORD GRANDALL, M D, Acting Editor

Business and Editorial Offices 17 West 43d Street New York U S A  
Address Journals sent to Exchange to 1313 Bedford Avenue Brooklyn N Y U S A

## COMMITTEE ON PUBLICATION

S W S Toms M D Chas mas Nyack Edw d Livingston Hunt M D New York A Clifford Mercer M D Syracuse  
W Medd ough Dunning M D Bronx Frank V a Fleet M D New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

SEPTEMBER 1918

No 9

## EDITORIAL DEPARTMENT

### DELEGATES

THE season for delegate elections is approaching. The majority of counties elect their delegates to the State Society in the fall or early winter. A few words upon the subject of delegates may therefore be opportune.

The office of delegate is one of work. It is not an honorary position and should not be given as a mere compliment. No one should accept it who does not intend to go to the annual meeting and sit through the three sessions. The custom is too frequent of members nominating friends without ascertaining whether they will perform the duties of the office. In counties where the term of service is two years, it not infrequently happens that a member is elected a delegate who is already a delegate with one year yet to serve. This not only confuses matters, but may deprive the society of a representative.

The importance of the office is often looked upon too lightly. The House of Delegates is the law making body of the society. Its action vitally affects every member of the Society and many times the whole profession of the state.

It is a fundamental principle therefore, that every constituent society should be fully represented, and have a voice in every action taken. But there is a broader reason than this. It is of vital importance to the organization as a whole that every seat in its legislative body should be filled. Every locality and every shade of opinion should be represented.

To this end the state society gives the broadest latitude to the county societies in the filling of their delegations, for it desires full representation in every meeting of the House of Delegates.

The number of delegates for each county society is fixed by law. The number of alternates is not fixed. As many may be elected as the county may desire. It is desirable that counties having but one delegate should elect more than one alternate. It often happens that neither the delegate nor the alternate can attend the annual meeting. The county is thus completely disfranchised. It has no voice in the councils of the society and the House of Delegates is incomplete. With several alternates, one may be designated by the delegate or county secretary who can attend

It will then rarely happen that the county will be without a representative

In counties with several delegates and alternates it is unwise to specify a special alternate for a special delegate. The method above referred to for one delegate may here be adopted. If a delegate cannot attend, a selection can be made from the legally elected alternates. This is the method adopted by the State Society in filling its delegation to the American Medical Association. It should be understood that no one can sit in the House of Delegates without legally attested credentials.

Still another plan for filling its delegation is adopted by one of the large societies, and has been approved as legal by the State Society. No alternates are elected. At the last meeting before the annual meeting of the State Society all vacancies are filled by vote. When the delegation reaches the meeting place vacancies that may then exist are filled by vote of the delegates there present. This method was approved by the State Society in accordance with its policy of encouraging the county societies to have full representation, and to leave to them their own method of securing it. It may be repeated that the State Society is desirous of having the fullest possible representation in its most important body.

Most county societies pay the traveling expenses of their delegates. The rule should be invariable that such expenses will be paid only when the delegate attends every meeting of the House of Delegates.

It is hoped that this brief article may lead to a fuller understanding of the dignity and importance of the office of delegate, and may encourage a fuller attendance in the body so vital to the profession of the state.

# NUMBER OF DELEGATES ALLOTTED BY LAW TO EACH COUNTY SOCIETY

Albany, three  
 Allegany, one  
 Bronx, eight  
 Broome, two  
 Cattaraugus, one  
 Cayuga, one  
 Chautauqua, two  
 Chemung, one  
 Chenango, one  
 Clinton, one  
 Columbia, one  
 Cortland, one  
 Delaware, one  
 Dutchess-Putnam, three  
 Erie, eight  
 Essex, one  
 Franklin, one  
 Fulton, one  
 Genesee, one  
 Greene, one  
 Herkimer, one  
 Jefferson, one  
 Kings, twenty-three  
 Lewis, one  
 Livingston, one  
 Madison, one  
 Monroe, five  
 Montgomery, one  
 New York, twenty-three  
 Niagara, two  
 Oneida, three  
 Onondaga, three  
 Ontario, one  
 Orange, two  
 Orleans, one  
 Oswego, one  
 Otsego, one  
 Queens-Nassau, eight  
 Rensselaer, two  
 Richmond, two  
 Rockland, one  
 St. Lawrence, two  
 Saratoga, one  
 Schenectady, two  
 Schoharie, one  
 Schuyler, one  
 Seneca, one  
 Steuben, two  
 Suffolk, two  
 Sullivan, one  
 Tioga, one  
 Tompkins, one  
 Ulster, one  
 Warren, one  
 Washington, one  
 Wayne, one  
 Westchester, five  
 Wyoming, one  
 Yates, one

# Original Articles

## THE SURGICAL TREATMENT OF WAR WOUNDS\*

By CHARLES LANGDON GIBSON M.D.  
F.A.C.S.

NEW YORK CITY

As the present war has brought out entirely new military problems, so has the preconceived notion of treatment of wounds required entire revision. The wounds inflicted today are by new forms of projectiles, the supply of which in contrast to former methods is absolutely lavish. Deep trench warfare has rendered the soldier a filthy and constantly contaminated person, particularly the trenches of Flanders and Northern France dug in soil which for centuries has been saturated with manure and other fertile sources of infection.

The treatment of war wounds is a highly specialized branch of surgery, and the rules of civil practice apply hardly, if at all, at the front. Moreover, we have to deal with a different kind of individual than in civil practice. In the latter phase, the factory hand who is badly hurt, will, however, have been in good condition immediately prior to his injury, will have come from clean surroundings, his person and clothing will be relatively uncontaminated, will recently have had food and drink and will not have been exposed unduly, and perhaps for a long time to the effects of cold and wet. When injured some form of competent relief is almost immediately at hand and transportation to a well-equipped hospital usually speedy and comfortable. Moreover the treatment at this institution can usually be given promptly. The elements of fear and anxiety and the strain of prolonged expectation of injury are likewise absent.

The wounded soldier will probably have been subjected to harassing conditions of warfare. His injuries may be multiple. It may be some time before he is picked up and in addition to the other conditions he may be deprived of food and drink, especially the latter, for a long period of time. The journey out of the trenches is long, tedious, hazardous and may greatly add to the patient's shock. It is therefore obvious that special training for proper treatment of such cases must be obtained and must be derived from practical experience at the front and cannot be replaced by theory.

The three main factors of wounds are (1) shock, (2) hemorrhage, and (3) sepsis. The latter element in this war is almost a hundred per cent possibility. Soon after the outbreak of hostilities it was generally conceded that this constant element of sepsis must be combated by something more than the usual line of treatment for every day trauma.

In addition to laying open wounds freely three things quickly developed, namely, the im-

portance of early treatment, no matter what kind, the bad effects of leaving projectiles and other foreign bodies in the wounds, and the necessity of actual destruction of the bacteria. The first has been met by constantly moving up better organized lines of relief closer and closer to the front. At the present time it is aimed, if possible to do such thorough and early surgery close to the lines that relatively little remains to be done at the rear. It became obvious that even by modern antiseptics no foreign body, usually contaminated as they are, could be sterilized by any method no matter how efficient or thorough.

Credit is due to Dr. Carrel and his co-workers who have demonstrated that although bacteria can be very efficiently combated in the tissues at almost any stage, these methods fail in the presence of foreign bodies. Also proceeding on these lines it became evident that tissues which were damaged made favorable places for bacteria and were of themselves a source of danger.

It was pretty clearly demonstrated in 1916 by Carrel and some of those who followed his methods reverently, like Depage and La Famine, that the Carrel method—providing the patient came under treatment early and was submitted to thorough operation, namely, free excision of the tract of the missile and the removal of all foreign bodies—retained as an efficient prophylaxis against infection.

It will be appreciated that even with the demonstrated efficiency of chemical sterilization good surgery applied at a very early stage was almost a *sine qua non* and in fact, chemical sterilization became an adjunct and not a substitute for good surgery.

The Carrel method is well known or should be. In order to be efficient it must be done rightly. To be done rightly requires a series of steps requiring infinite care and continued treatment under the same conditions. It is quite impossible under the unusual circumstances of warfare to give the great bulk of wounded men who come to hospitals near the lines in large numbers and in a short space of time, such treatment.

The present day generally accepted method is practised by the Allies on the Western Front, aims at prophylaxis of wound infection by a method which, in some ways is simple, and if it can be carried out efficiently gives such good results as to minimize the necessity of complicated or prolonged after treatment. The present day method aims at the radical excision of all open wounds, removal, so far as feasible of all foreign bodies be they what they may, and the complete removal of all bruised infiltrated damaged or "shocked" tissue. Operations done on this principle, and done thoroughly by highly competent surgeons with a large experience in this particular line of work give the surest guarantee against the development of all forms of sepsis, particularly the dreaded gas gangrene.

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 23 1918.

It has been my privilege to observe the workings of this method in both the British and French Armies. The principles in both Armies are about the same, varying only in minor degrees and particularly in those of organization. This radical excision of wounds is usually done in the British Army in the so-called "Casualty Clearing Station," which will be situated ordinarily from five to ten miles back of the lines.

The wounded soldier is first brought to a dug-out back of the trenches, where first aid is administered, and then to the dressing station, say one to three miles back of the lines, at the end of the communication trenches, at a place where ambulances, motor or horse, can come with comparative safety.

The Casualty Clearing Stations are mostly under canvas. Their units can be multiplied readily. In so-called "peace" times they have approximately two hundred beds and a medical staff of six, which can be increased to eight hundred or more beds, and a medical staff of approximately twenty-five. The patient is brought in carefully warmed ambulances, usually under a sufficient amount of anodyne to diminish shock, both physical and psychical. He is carefully unloaded in a waiting room, which is well warmed and protected from drafts, and passes into an examining room, where his wound and condition are carefully investigated by a highly trained and competent physician, who decides on the various steps he will need.

A very few cases of apparently simple conditions may be transferred directly to a base hospital from the Casualty Clearing Station, but the majority of the cases will need some form of operative procedure. The minor cases which form a large group are handled by a special surgeon and a special department, and their conditions taken care of either with or without a local anesthetic or with "laughing gas." A certain group of cases may require operation, but their conditions are so precarious that it must be postponed until the patient can be brought back into better condition. These are sent to a special department called the Resuscitation Ward, where they receive special attention, and where there are special resources. Emphasis is placed on heat, particularly heat as given in hot air baths. The administration of fluid is important, as the dehydration of these patients add to the gravity of their conditions. When these patients seem in a condition to stand operation they are returned to the pre op room where all the patients await their turn to go into the operating room. Patients requiring an operation which is perhaps not very urgent may wait in the pre op room several hours, giving precedence to the more urgent cases. The patient is still kept very warm and is cleaned up to the extent his condition will allow. Badly shocked patients are little disturbed, their clothing being removed on the op-

erating table when they are anesthetized. When the patient comes to the operating theatre he is operated on by the surgeon, the head of the surgical team.

A surgical team consists of an operating surgeon of recognized capacity, a physician who acts as anesthetist and at other times does work around the hospital, particularly in the after-care of patients, a nursing sister who acts as assistant surgeon and instrument nurse, and a trained orderly. These teams, which generally have been working together for many months, make for the highest efficiency of organization. These teams now bring with them a portable operating table and a supply of routine instruments. This system allows the localization of both personnel and apparatus when it is needed and under most economical management.

The English group their major operating in one single operating theatre. This system makes for distinct economy of space and equipment, and I have never seen any evidence of confusion arising from this method. (This plan is in contrast to the French system, where each surgeon has his own cramped and very small operating room.) The patients are for the most part given general anesthetic, having already received in transit a generous supply of morphine. The skin is disinfected by mechanical cleansing with soap and water and 5 per cent alcohol picric acid solution which is very efficient and non-irritating.

The surgeon is guided also in some cases by the X-ray pictures. In times of greater activity, many X-ray examinations have to be omitted, and it is only in "peace" times that an appreciable amount of plates can be made, the patient having to be examined under the fluoroscope. The French have developed their fluoroscopy and other means of foreign body localization to perhaps a higher degree than the British, and seemed supplied with rather better material resources.

The operation having been conducted along the lines already noted, it is customary in both armies to swab out the wound with some form of antiseptic, the most popular being ether—why, I don't know. Rather small and superficial lesions can be sewed up like ordinary operative wounds, but in the British Army the deeper wounds are more likely to be packed with gauze soaked in paraffin oil containing some form of antiseptic, 1 per cent iodoform seems to be most popular.

These patients are then returned to the wards, most of them to be evacuated on the first hospital train, if their condition permits. While it is the aim of the Casualty Clearing Station to evacuate patients for military and psychical reasons as soon as possible, it is generally planned to keep head, chest and abdominal cases one week.

At the base, wounds are redressed and packing removed at a varying time, usually on the aver-

age from five to six days. It is stated that the condition of the wound then allows of early suturing in layers and that the results are generally good. I have no means of corroborating this statement from personal experience, but I believe it to be true.

In the French Army primary suture of these wounds is done rather more freely than in similar institutions of the British Army and considerable reliance placed on cultures, but if the culture shows streptococcus or bacillus perfringens the wound is immediately layed open and treatment of the open wound is instituted—either by the Carrel method or some other method, as the operator practices.

With the French Army, this means a somewhat closer relation between the H. O. E. (Evacuation Hospital) and the bases. Moreover the French, so far as possible, like to have the base hospitals in which the work is to be continued only a relatively short distance away. It is the belief of the best surgical minds in France that a hospital situated at a point farther away than 40 to 60 kilometres does not really perform the function of an acute hospital, but rather that of a convalescent home.

I deem it inexpedient to go further into the treatment of war wounds, when they have been transferred in the later stages to a base hospital. The farther away from the front and the longer the time elapses from the injury, more do the conditions resemble those of civil practice, and it is not my purpose to enter into consideration of these.

I recommend a pamphlet entitled "Surgical Treatment of War Wounds—In the Medical Units of the Third Army, British Expeditionary Force—with special reference to Casualty Clearing Stations—February, 1917," which gives thoroughly and more in detail some of the points I have touched on in this article. I append two articles from this pamphlet.

## A

### RECEPTION AND DISTRIBUTION OF CASES IN A CASUALTY CLEARING STATION

By Capt E. W. N. WOOLER, R.A.M.C.

#### RECEPTION OF CASES

On arrival, patients are sent to the reception room or rooms. If only one is available it is partitioned, so that lying cases go to one side of the partition, walking cases to the other. It is better, however, to have separate huts for each class. Their names are entered in admission and discharge books. They are then sent to separate dressing rooms, one for lying cases, one for sitting cases. In case of a big rush, accommodation for 100 to 200 cases or more should be available near the reception huts, where patients may

be put before their names can be taken. This prevents the ambulance cars being held up unduly.

The dressing room for lying cases should have accommodation for about eight cases on folding tables at one time. These wooden tables should be substantial, and are made in such a way that, when the stretchers are placed on them the poles of the stretchers fall over the sides of the tables and so facilitate the dressing of patients. They are arranged in two rows of four, each of the two medical officers on duty dealing with the cases in one row.

*Annexe*—A part of each dressing room is screened off to form an annexe for the performance of minor operations.

#### DISTRIBUTION FROM DRESSING ROOMS

##### A. LYING CASES

All cases fit to be evacuated to the base forthwith are sent to marquees or huts, where they are fed and otherwise attended to till a train is available.

The following is a rough classification of those cases which are detained.

(1) *Abdominal Cases*, where penetration of the abdomen is suspected. Wounds of the chest (especially of the lower part) of the lumbar region, sacrum, or buttocks, should always lead one to examine carefully for abdominal symptoms.

(2) *Chest Cases*, where penetration of the chest is evident from the urgent symptoms present. Other cases where penetration is merely suspected, or very doubtful, can be evacuated at once.

(3) *Head Cases*—A large proportion of these, namely, those with "compression" symptoms or which show undoubted evidence of injury to the brain, especially if brain matter is exuding from the wound.

(4) *Gas Gangrene*—Cases of gas infected or suspected gas-infected wounds, e.g., a limb showing tension, even though there is no evidence of actual gas formation.

(5) *Femur*—Cases of compound fracture of femur, and all other fractures which cannot be thoroughly cleaned up and efficiently splinted in the dressing room.

(6) *Oozing*—Cases of deep seated hemorrhage—even though the vessel concerned is not a large one. Many men arrive in an exsanguine condition, owing to their wounds having oozed steadily all the way down but the appearance of the wound at previous dressings has not led each succeeding M.O. to attach much importance to it. By the time the man arrives at the Casualty Clearing Station he has lost quite a considerable amount of blood.

(7) *Shock, External Hemorrhage*—All cases suffering from shock, external hemorrhage, etc., unfit for evacuation, whether cases of above type or not, e g, cases of multiple wounds

(8) *Flesh Wounds*—A variety of flesh wounds, which do not admit of immediate evacuation, or which cannot be dealt with in the operating Annexe, e g, a limb showing a large wound (but no fracture) with considerable destruction of muscle tissue. The extent of operation required may be beyond the limits of the Annexe with gas anesthesia, and the case should, therefore, be sent to the theatre

#### DISPOSAL OF CASES

(1) *Abdominal Cases*, if fit for immediate operation, are sent to the pre-operation room for preparation. If unfit for operation at the time of admission, they are sent to the ward set apart for resuscitation of cases, or to the special abdominal ward

(2) *Chest Cases* are sent to wards set apart for them

(3) *Head Cases* to pre-operation room

(4) *Gas-Infected Wounds* to pre-operation room

(5) *Compound Fracture of the Femur*, and some other fractures, to pre-operation room

(6) *Hemorrhage*—Cases of deep-seated hemorrhage to pre-operation room

(7) *Flesh Wounds* to pre-operation room

(8) *Shock, Etc*—Cases suffering from shock or effects of severe hemorrhage, to resuscitation wards

The M O in charge of these wards (pre-operation, chest, and resuscitation) notifies the surgeon in charge, as soon as a case is fit for operation or develops symptoms necessitating immediate operation. Cases suffering from active hemorrhage, which cannot be dealt with in the dressing room, should be notified to the surgeon in charge of the theatre at once

#### GENERAL PRINCIPLES GUIDING THE M O IN DECIDING WHETHER TO EVACUATE OR DETAIN A CASE

NOTE (1) If there is any tension, oedema, or inflammation round the wound,

(2) The presence of a thin brownish discharge, which exudes under pressure,

(3) An odor, "fæcal" in character, and

(4) If the wound is one in which gas-infection is likely to develop if left alone, e g, a small wound of entrance which has become wholly or partially occluded, and where there is much laceration of deeper part

If the condition of a wound is satisfactory and presents none of these appearances, or if its condition can be dealt with in the operating

Annexe, such a case may be evacuated. The presence of any one or more of these phenomena, which is outside the scope of the Annexe, should lead to the case being detained and sent to the theatre

(5) Some cases, which have been lying out for several days and are suffering from effects of exposure and starvation, should be detained, although their wounds might admit of their being evacuated

(6) Finally, attention must be paid to the number of cases accumulating for the theatre, and should that number become large—say 40 or over—cases may have to be evacuated which would otherwise, for the sake of safety, be sent to the theatre. Their wounds should be opened up by well-placed incisions. This can sometimes be done without anesthesia, e g, in a transverse wound, by incision on the distal side where the nerve supply has been cut off

#### ANNEXE TO DRESSING ROOM

This consists of a part of the dressing room, screened off and fitted up for the performance of minor operations under gas or ethyl chloride anesthesia. By having such an annexe, the theatre, which is always working at high pressure, is relieved of a certain amount of operative work, and the routine work of the dressing room is thus interfered with less than if operations are carried out in it. There is also the additional advantage that other men do not see anesthetics being given, nor operations being carried out

#### TYPE OF CASE AND EXTENT OF OPERATION SUITABLE FOR OPERATING ANNEXE

(1) Cases of gunshot wound, in which a foreign body can either be felt or seen projecting beneath the skin, and which can be easily removed. Where, e g, abdomen or joint is implicated, such cases *must* go to the theatre

(2) Cases of gunshot wound, where enlargement of the wound will afford better drainage, and lessen the risk of the wound becoming occluded and developing a gas infection

(3) "Simple," in the strict sense of the term, as opposed to "compound" fractures, e g, of the femur, for application of a Thomas's splint

(4) All cases of compound fracture, which require re-dressing and re-application of the same or another type of splint, but which do not call for immediate theatre treatment. This only applies to cases where the wound is freely open, and there is no great comminution of bone, as all severe compound fractures should be sent to the theatre

(5) Lastly, if the pressure on the theatre is great, a few cases, where a limb is practically severed, may be dealt with, and amputation completed, provided other considerations, such as the general condition of the patient, admit of this

procedure. As the stumps in most of these cases will require extensive trimming, amputation is not recommended for the Annexe except under conditions of extreme pressure.

Following the administration of gas, etc., cases should be detained in the Annexe for a quarter of an hour before being sent to the evacuation shelters. This principle is of more importance with reference to cases which have received theatre treatment, and are suitable for evacuation.

ORDINARY CASES WHICH SHOULD BE "TAKEN DOWN," WITHOUT FAIL IN THE DRESSING ROOM

- (1) When dressings are soaked with blood
- (2) When splints are not applied properly or when unsuitable splints have been used
- (3) When swelling has occurred, particularly in distal parts of limbs, which may indicate concealed hemorrhage
- (4) When genuine complaints of much pain are made, especially if of recent development, possibly indicating a gas infection
- (5) Every case of gunshot wound of the head. Many cases with severe fracture, and with brain matter extruding, walk into the dressing room.

#### SCHEME OF LABELLING

In the distribution of lying cases from the dressing room it is necessary to employ some scheme of labelling in order to avoid confusion. The larger proportion of cases will be found fit for evacuation (probably about three quarters), and these are marked with a red label bearing the letter "E." Other cases are labelled with a label, the color differing according to whether the case is intended for chest wards, pre-operation room or resuscitation wards, etc., each label bearing the name of the ward in addition. By combining the name of ward with a distinctive color, there should be no mistake on the part of the stretcher bearers as to the allocation of a case. Except in the case of red "E" labels, the numbers of which must be unlimited, the number of other labels for chest and resuscitation wards should correspond to the number of beds available in each ward. The labels are sent back to the dressing rooms as the patients are evacuated and are kept there in a special box for each sort. In this way the M.O. knows when such a ward is full. By checking the number of labels issued for pre-operation room, an indication of the amount of work awaiting the theatre staff can be obtained.

#### B. WALKING CASES

In dealing with "walking cases" the same general principles are followed as with the lying cases, and the same scheme of labelling is employed.

A small operating annexe for minor operations is also screened off for the same type of case, and with the same scope of operation as in the lying cases.

#### CASES FOR EVACUATION FROM THE DRESSING ROOMS

are sent, "sitters" to a large shelter, lying cases to special marquees in the Evacuation Department, where they can be fed and otherwise attended to. Marquees are available also where sitting cases can go and lie down if they wish to, pending the time for their evacuation by train. If there is much delay, many of these cases will require dressing.

#### THE PRE-OPERATION ROOM

The pre-operation room should be capable of holding at least 30 to 50 cases on stretchers. Every case for operation, except those mentioned above for special wards, passes through this room before going to the theatre, and is undressed, shaved, etc. In this way the wards are spared a great deal of unnecessary work, as no case for operation, unless especially collapsed, etc., is taken to any ward until it leaves the theatre. In addition, the patients benefit by remaining on the stretchers until they are put on the table and have not to be lifted from stretcher to bed, or vice versa.

#### SOME IMPRESSIONS GATHERED IN THE DRESSING ROOM

##### *Question of Frequency of Dressing*

A very large number of both lying and walking cases have been brought in which have been dressed at the Regimental Aid Post, Advanced Dressing Station, Main Dressing Station, and, in some cases, finally at the Corps Dressing Station, before reaching the Casualty Clearing Station. On an average these dressings have been done during a period of six to twelve hours. As far as the walking cases are concerned, this appears a waste of time and of dressing material, and in lying cases, especially those severely wounded, is, in addition, of very doubtful value from the point of view of the patient.

In order to lighten the work at a Casualty Clearing Station it would be well to develop the work at Main Dressing Stations in a more specialized way, e.g., by having an experienced officer to select cases serious ones, including all fractures not requiring immediate attention to be sent on at once to the Casualty Clearing Station. Lighter cases, likely to be able to travel to the Base, to be carefully dressed and labelled in some way to indicate that they need not be dressed again at the Casualty Clearing Station, whether labelled in this manner or not. It will be made evident from the papers which are to be read what points require special attention from M.O.s in field ambulances, etc.

In a general way the rule should hold that no dressing should be changed unless there is some definite indication for it.

### THE ARRANGEMENT OF WORK WHEN TWO OR MORE CASUALTY CLEARING STATIONS ARE WORKING IN CONJUNCTION

#### 1 *Each may be on duty for 24 hours at a time*

This is most practicable in quiet times, but during an offensive one Casualty Clearing Station alone may not be able to deal with all the cases which may arrive in that period, and, again, it frequently happens that under this scheme one Casualty Clearing Station is worked very hard for one period of 24 hours, while the other is comparatively quiet in the succeeding 24 hours. Lastly, during a period of this length cases for operation accumulate, and many have to wait even till next day before they receive attention. The danger of gas gangrene developing under this system is evident.

#### 2 *Each Casualty Clearing Station receives a definite number of cases (e g, 200), and is then relieved by the other*

The disadvantages of this scheme are two-fold. In the first place, the receipt of 200 cases may not be any indication of the amount of work which has to be done. For instance, three-quarters of the 200 may be walking cases, and therefore the amount of operative work involved is light compared with that which may fall to the lot of the other Casualty Clearing Station, should their 200 be composed of a large proportion of lying cases. The danger of gas-gangrene involved in the accumulation of cases and consequent delay in treatment is almost as great in this scheme as in the first.

#### 3 *Each Casualty Clearing Station received a definite number of cases alternately (e g, six cases)*

This scheme appears to have none of the disadvantages of the other two. The danger of gas-gangrene through delay in treatment is greatly reduced and the work is divided evenly between the two units. A disadvantage may lie in the fact that both Casualty Clearing Stations will be more or less on duty continuously, owing to the small number of cases taken by each, and therefore will never have a rest for long. But it is upon this small number that the efficiency of the scheme depends.

### CONCLUSION

Such is the scheme I would recommend for the reception and distribution of cases, based on three months' experience of dealing with large numbers. The whole basis of the scheme depends upon one main factor—that of deciding in the dressing rooms what is to be done with each case, as opposed to any other scheme whereby such decision is arrived at in the wards.

### B

### SOME PRINCIPLES OF TREATMENT OF GUNSHOT WOUNDS

By Capt C H UPCOTT, R A M C

AFTER two and a half years of war there is still great divergence of opinion on the subject of wound treatment. This is partly due to the fact that military necessities make it impossible for any one man to have cases under observation from the time when the first surgical treatment is undertaken until complete recovery. Many men have written lauding this or that form of treatment, but their observations refer only to a certain period in the history of a wound, and they are generally concerned with the powers of some particular chemical application to hasten the healing process. This quest of the healing balm continues, and, I think, obscures the one common point where all agree—the need for free enlargement of the wound. It is of this exteriorization of wounds that I wish to speak.

It must be understood that my remarks are confined to the work of a Casualty Clearing Station, I have no other experience. I have been guided by the behavior of wounds during the few days the patients have remained in the Casualty Clearing Station, and by occasional reports from the Base on the later progress of cases.

Most cases arrive at a Casualty Clearing Station between six and twenty-four hours after the infliction of the wound, and, provided the patient's general condition permits of it, the sooner the wound is attended to the better. This proviso as to the condition of the patient raises one of the most difficult problems with which we have to deal. A patient arrives profoundly shocked by his wounds, the cold, and the super-added trauma of the journey. The usual methods for treating shock are applied—warmth, fluids, rest and the alleviation of pain.

Recently transfusion of whole blood has been widely advocated. While, in some cases, the immediate revivifying effect of this procedure is striking, in many the benefit appears to be no more than could be attributed to the bulk of the fluid injected. In cases suffering from combined shock and hemorrhage, it may be that the blood introduced merely goes to fill the venous pool of the relaxed abdominal vessels. Tight bandaging of the limbs or abdomen is always applicable and should be used in conjunction with transfusion. Apart from blood transfusion, the subcutaneous or rectal infusion of saline or glucose remains our chief stand-by in the ward treatment of severe shock. The glucose issued in the form of powder appears to be infected with moulds and solutions made from it soon become turbid, even after sterilization. Indolent abscesses sometimes occur at the site of subcutaneous glucose solution which may perhaps be attributed to this cause. In the early stages of anaerobic infection,

the intravenous infusion of sodium bicarbonate is of great value. As a stimulant in these cases, a hypodermic injection of M<sub>x</sub> of a 10 per cent solution of camphor in olive oil should be given and repeated if necessary.

After a few hours there may be a slight improvement in the patient's general condition, then the symptoms of shock merge into those of an overwhelming toxemia suggestive of "acid intoxication." The pallor becomes more marked, the breathing more shallow and often sighing, the feeble pulse, formerly imperceptible, becomes increasingly rapid, while the temperature remains low. The patient often vomits, his mind is alert, but there is little complaint of pain. These are the early signs of deeply-spreading anaerobic infection, so liable to occur in wounds of the buttock or thigh, and unless an operation is performed promptly the patient will die. The difficulty lies in choosing the moment to strand an operation and before he has been weakened by the toxemia. I am accustomed to rely chiefly on the character of the pulse, as soon as it can be felt at the wrist a one to two-hourly record of its rate should be kept, and if this shows a progressive speeding up, you have an urgent indication for operation.

It is well to bear constantly in mind the state of affairs existing in a gunshot wound and the objects to be attained by operation. A missile passing through a limb dissipates a considerable amount of its energy in the tissues, they are struck a terrific blow, and the greater the resistance they offer the more energy will the projectile lose in its flight. When the resistance is enough to arrest, for example, a bullet it is obvious that all the energy of the missile is spent in the body. It does not follow, however, that the tissue injury caused by a lodging wound is greater than that from a traversing wound, the special gravity of lodging wounds depends on other factors. Given an equal resistance to its passage, the higher the velocity of the projectile, the greater the damage inflicted on the tissues. And this damage it not limited to the track of the missile, it imparts its momentum to everything in its line of flight, so that a radiating wave of vibration is set up destructive to cellular life. If the tissues vary in density, the more compact will be driven through the more yielding with a shattering effect.

This is the first point of importance, the immediate destructive effect of a projectile is not limited to its path.

The second point is that practically every wound is permeated with foreign material bearing aerobic and anaerobic organisms and some of the latter are capable of thriving in the devitalized tissues among which they are sown.

The object to be attained by operation is a widely opened wound, from whose surfaces all foreign matter and dead tissue have been removed.

## TYPES OF WOUNDS

The types of wound are so manifold that any classification is difficult, but they may be placed in three groups, to provide headings for the discussion of treatment.

### 1 *Simple Perforating Wounds in which the track is of about the same diameter as the skin aperture*

An example of this group is a bullet traversing at long range the soft tissues of a limb. Entry and exit are small, and the damage to muscle is slight.

The majority of these wounds require no operative treatment, or at most excision of skin and fascia. Depending probably on the state of the muscle as regards contraction at the moment of impact, small entry and exit wounds are sometimes accompanied by great destruction of muscle, such cases belong to group 3.

Wounds caused by shrapnel balls have certain peculiar features. Here you have a smooth spherical projectile of low velocity. Having penetrated the skin, its smooth rounded surface enables it easily to find a passage through the muscles often without causing much surrounding disturbance, but its velocity is so low that it is very frequently held up in meeting a tissue of greater resistance. Indeed, it is remarkable how often shrapnel balls are found lodged beneath the skin after having perforated the body or a limb. If the ball and other foreign material are removed, and the entry wound excised, the track does not often cause trouble, although one would think that the wave of clothing carried in ahead of the ball would give rise to serious infection.

### 2 *Wound in which the destruction of skin and superficial tissues is of greater extent than the destruction of deeper tissues*

In such wounds as these (gutter wounds explosive exits superficial lacerations, evulsions) the wound is more or less exteriorized and all that is required is the excision of all the damaged tissue in order to attain the ideal of an open wound with a living uninfected surface.

If this can be assured, the new wound may be closed by primary suture but unless one can be absolutely certain that the whole of the original wound surface and underlying "shocked" tissues have been removed without infecting the new wound suture should not be attempted.

### 3 *Wounds in which the skin aperture is small in relation to the extent of damage inflicted on deeper structures*

Such wounds may be divided in (a) Lodging wounds, (b) Traversing wounds.

This group includes the majority of wounds, and apart from injury to important structures, these are the wounds that most urgently call for surgical treatment.

## TECHNIQUE

1 *Sterilization of Skin*

Hairy parts should be shaved. If the skin is heavily caked with mud, a scrub with soap and water is advisable, in most cases that may be omitted. Cleanse the skin by rubbing with swabs, wet with an antiseptic, such as Dakin's fluid or eusol, for two or three minutes, follow by rubbing with methylated spirit for one minute. During this process the surface of the wound should be covered with an absorbent swab, so that its discharge may not escape and soil the skin. With a pair of forceps pack the wound with gauze dipped in 5 per cent alcohol solution of picric acid (or 10 per cent iodine).

In the case of a wound of Group 3, this allows one to ascertain the direction of the track, a search that is often aided by moving the limb in different directions.

Finally, paint the skin with the picric solution, and allow to dry while the towels are being placed in position. I have found that skin treated thus can be rendered sterile. The process may often be carried out during the induction of anæsthesia. Hurry and lack of method in cleaning the skin will result in failure to achieve sterility.

2 *Excision of Gutter Wound (Group 2)*

The raw surface of the wound is dried and re-packed with gauze, it is then completely encircled by an elliptical incision, which should not be less than one-quarter inch from the edges of the wound. It is advisable to complete one side of the ellipse first, cutting deeply through skin and fascia together, and then deepening the cut rapidly until it has reached beneath the deepest part of the wound. This incision is then packed with gauze, while the other half of the ellipse is made, so cutting out a wedge of tissue enclosing the wound, and not opening into it at any part. The use of a finger in the wound sometimes enables one to cut clear of pockets which would otherwise be opened. If this is done the same finger should be kept in the wound until the excision is completed, it is then disinfected, or the glove changed. All bleeding is carefully stopped, and the wound closed with silkworm gut sutures, which should just emerge in the depth of the wound as they cross from side to side. Gum mastic varnish, or, better, "Aeroplane dope," makes a good dressing, and the limb should be firmly bandaged to prevent effusion. If the original wound is opened into at any part during the operation, primary suture should not be done, but the edges may be lightly drawn together over a salt pack or the wound may be left open and sterilized by the Carrel-Dakin method.

3 *Excision of Traversing Wound with explosive exit (Group 2)*

Pack the wound firmly with gauze. Enter the knife vertically not less than one-quarter inch from the edge of the wound, and, keeping the blade parallel with the sides of the wound, cut all the way around it, deepen the incision if needed until the apex of the wound is reached, thus making a cone-shaped excision of the wound. Dressing may be either a small central tube to the track of the missile surrounded by salt pack or by Carrel-Dakin.

4 *Tunnel Wounds (Group 3)*

Draw a strip of gauze through the tunnel, and connect the entrance and exit wounds by an incision, cutting down on to the gauze, discard the soiled knife, and excise the wound as in Group 2. Narrow tunnel wounds should not have a rubber drainage tube drawn through them. This only blocks discharge and if near a blood vessel is liable to cause ulceration of its walls.

5 *Traversing Shell Wounds (Group 3)*

Entry and exit should be excised by elliptic incisions. Usually it is unnecessary to excise more than one-quarter inch of skin around the wound. As a general rule the area of skin excised varies inversely with the skill of the surgeon. In doing this the knife should be plunged through the skin parallel to the track of the missile, and an attempt made to excise the tissues around the wound to the depth of the knife blade in one piece. The crushed muscle and aponeurosis in the deeper parts of the wound are seized with tissue forceps and cleanly excised. If sufficient access is not provided by the original wound excision, the ends of the ellipse should be prolonged, so that the sides of the wound may be retracted. It is well to remember that prolonged and forcible retraction of muscle is liable to crush its tender fibres, and render them a prey to saprophytes in the wound. The need for powerful retraction may be avoided by the use of free incisions. In dealing with the deeper parts of the wound it is to be remembered that the gravest danger arises from infection with gas producing bacilli, which grow most readily in dead and dying muscle. The following points are important.

(1) If a muscle is deprived of its blood supply it will not bleed when cut, and will probably die.

(2) A dead muscle will neither contract nor bleed when cut.

(3) A muscle in the first stages of invasion by anaerobes (possibly when poisoned by toxine) loses its normal resilience and has a peculiar brick-red color.

(4) In the later stages of invasion the muscle becomes crepitant and exudes a dark reddish brown, foul-smelling fluid.

Taking singly, the most important of these signs is absence of bleeding on section. A muscle

may fail to contract when cut, so that if this sign is present alone the muscle need not be excised.

### 6 Lodging Shell Wounds (Group 3)

These are to be dealt with on the same lines as 5 (traversing shell wounds) with the addition that every effort should be made to find and remove the shell fragment and any particles of clothing carried in with it. To this end, exploration by sight is more valuable than by the sense of touch alone, whether X-ray localization has been done or not. In these cases it is sometimes difficult to find the track of the missile. If the skin and fascial wound be excised, and then the limb be moved, so that the muscles and skin assume different relative positions the track will become visible, and its direction may be gently explored with the finger and excised. In cases in which the metal fragment is lodged among pieces of bone in positions where the wound cannot be opened up, I have found the Makenzie-Davidson telephone probe of great service.

Lodging wounds often need a counter incision, either for the purpose of removing the projectile or to provide drainage. The objection to dependent drainage openings, if the Carrel-Dakin treatment is to be adopted, must, however, be borne in mind.

### 7 Multiple Wounds

These deserve separate mention on account of their frequency, and by reason of the special problems they present. The condition of the patient often will not allow one to deal with each wound as thoroughly as could be wished. The first thing to do is to determine the general direction of the projectiles. A search will generally reveal a graze, a gutter, or tunnel wound, giving a clue to the course of the others. It then remains to decide which wounds should be first dealt with. Excluding fractures or penetrations of the body cavities lodging wounds of the buttocks, thighs, calves, shoulders and root of the neck should receive preference. If 'time' presses, other wounds may be simply laid open by an assistant, and a salt tablet wrapped in wet gauze laid loosely in each.

### HEMOSTASIS

At the conclusion of all these operations, great care should be devoted to hemostasis, for pools of blood allowed to accumulate in the corners of the wound favor the progress of sepsis. Seeing that these wounds are accompanied by much crushing of tissue a plentiful supply of thrombokinase will be present, and once the larger vessels are secured, oozing may be stopped by pressure.

### LOCAL REST

Local rest to the injured part is to be secured by firm dressings—and in this respect the salt pack is valuable—or by splints. The use of sup-

porting splints should not be confined to fractures and joint injuries. Further, wounded muscles which have a large excursion on movement of neighboring joints should be immobilized by fixing those joints.

### AFTER TREATMENT

With regard to the care of a wound after operation. Although I know that sterility may be procured by the strict application of Carrel's methods, I am equally certain that these methods are not feasible during a heavy rush of work at a Casualty Clearing Station, however satisfactory they may be in "peace" times.

I believe that for the majority of wounds, after correct operative treatment, the salt pack is the best dressing in times of pressure. But it must be carefully and exactly applied, a little extra time devoted to the proper application of the dressing is repaid by the absence of any further need for disturbance of the wound during the short time that the patient remains in the Casualty Clearing Station. Wound involving the main vessels of a limb, and fractures with much comminution are not suitable for the typical salt pack.

I am fully conscious of the inadequacy of this paper, the subject involves so much tedious detail that the principle of wide excision has been ruthlessly applied in its preparation, but I have tried to lay stress on what I believe to be the most important part of the treatment of a wound—its early operative cleansing—without infringement on the subjects of those who are now to deal with regional surgery.

## THE TREATMENT OF GUNSHOT WOUNDS OF THE HUMERUS\*

By GEORGE EWART WILSON, MB Tor,  
FRCS England

Major, Canadian Army Medical Corps

ANYONE who has been on active service and seen the methods used for fixing gunshot wounds of the arm must have been struck with the unsatisfactory nature of the means used, and it was such a feeling that induced me to endeavor to work out a splint which would more nearly approach the ideal. Rather than discuss the various splints used I will briefly describe the method I employ.

My original splint was made from a single rod of one-quarter inch round malleable iron about seven feet long. It should not bend too easily, and if of good material may be twisted cold. The splint I show you is made of steel and has had two ball and socket joints inserted by means of which the position of the arm can be changed according to requirements. To get an adequate idea of the splint from a description is rather difficult, but a little care will suffice. There

Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 23 1918.

is a chest-piece shaped like the letter W and an arm-piece resembling an elbow. The chest-piece conforms to the shape of the antero lateral surface of the thorax. The arm-piece consists of two limbs, an anterior and a posterior. The anterior is connected with the front of the chest-piece by a joint and then turns downwards, forming the inner bar, and at the elbow turns directly inward as the upper bar. The posterior passes outwards at right angles to the plane of the chest-piece, forming the projection bar. Here a joint is inserted. It then turns downwards as the outer bar which should be parallel to the inner bar and in the plane of the anterior limb. At the bend of the elbow it turns inwards as the lower bar. The end bar is found by the lower turning upwards to meet the extremity of the anterior limb. The various measurements are such as correspond to an average arm.

The splint is applied as follows. The patient is seated on a high stool with a foot rest. A tight-fitting vest (undershirt) with the sleeve cut away from the side corresponding to the fracture is put on and the fractured arm supported and held forward out of the way by an assistant while he rests his good arm on the assistant's shoulder. It is important that the patient be sitting at ease and with the shoulders in a position of rest while the plaster is being applied. Three three-inch plaster bandages are now put round the chest reaching into each axilla as far as one can comfortably go and embracing the lower ribs in the axillary line. Now apply the splint, taking care that the plane of the arm-piece is directed in a forward direction and the chest-piece reaches to about the top of the plaster. In this position try out the arm and adjust if necessary. Some plaster cream is now rapidly rubbed about the chest-piece, and while an assistant holds the splint in position a fourth stage bandage fixes the splint to the chest. At this stage shoulder straps made from three-inch adhesive or strong cotton are placed in position and caught by the next two plaster bandages. By the time the plaster is cut from the axillæ the splint should be firm enough to support the arm.

Wide flannel slings are now applied between the inner and outer bars and between the upper and lower. The arm is placed upon these and extension is applied by adhesive drawing downwards against the lower bar while his hand grasps the endbar. The flannel slings are adjusted to suit the alignment. The patient is put to bed and if there is danger of pus tracking upwards a Gatch frame is used.

The advantage of this method is manifold, it is simple, cheap, readily made when the original one-piece splint is used, and readily transported. All patients with a fractured humerus can be treated as sitting or walking cases unless there are associated injuries which would prevent it.

Once applied the splint will remain in place till union is complete. The weight of the arm is borne by the chest so that the arm rests as in a cradle, consequently there is relaxation of the shoulder girdle muscles and then very little extension is required to keep the arm the proper length. Correct alignment is readily obtained for the arm is exposed to lateral and antero posterior views. Should one fragment require being pulled inward the traction is made on the inner bar and similarly with other directions. There is ample room between the bars for the dressings. While designed for the humerus it is just as applicable to fracture of the forearm as extension is then made to the outer bar. There is no pressure whatsoever upon the axilla. If there is a large gaping wound posteriorly then the flannel supports covered by jackonette to keep them from soiling are arranged so that the wound can be dressed without their removal, consequently there is no disturbance of the fragments and therefore no pain. In this way there is no need for extra help with the dressings and unless otherwise contraindicated the patients are up and about. Lastly, if the X-ray shows imperfect alignment, it can be corrected by changing the position of the arm-piece upon the chest-piece or by altering the slings or a combination of the two.

## THE CONTROL OF INFECTION IN WAR WOUNDS

By WALTON MARTIN, M.D., F.A.C.S.,  
NEW YORK CITY

INTRODUCING the general subject of the work of the military surgeon at the Clinical Congress last October, General Gorgas most pertinently said that the whole question turned on the problem of sepsis, in other words, on the control of infection. With this idea in mind I have thought it might be of interest to follow the development of the measures undertaken to insure this control during these three years of the great war, three years during which thousands and tens of thousands of injuries by projectiles have been treated, and to study how far they have been effective. It is a matter that is very near to us all. Before long the wounded from the battlefields in Flanders and France will be brought home. Many of them may return with well-established infections and all of us should have a definite idea of the nature of the injuries inflicted by projectiles and their relation to infection, we should be in a position to speak intelligently, at least, of the various measures which have been undertaken, and which should be undertaken, whether or not we expect to directly treat the wounded.

The first lesson taught by the present war was that the type of injury had changed. There are

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 23, 1918.

two great groups of gunshot injuries. In the first group are the injuries from the elongated, pointed rifle bullet at ranges of 500 meters or over. The track of the missile in this type is relatively simple, there is a small wound of entrance, an inconspicuous puncture and a somewhat similar small wound of exit. This wound of exit is said by Leriche never to be larger than a cherry pit.

This was the usual type of injury in the wars in Manchuria, in South Africa and in the Balkans. It was generally recognized that bacteria and foreign material were introduced by these pointed, undeflected rifle bullets striking the body in full flight, but the relation between tissue damage and micro organisms was such that the majority healed satisfactorily without clinical signs of infection. Statistics from the Japanese-Russian war show that over 86 per cent of the injuries were of this character.

The second group includes the injuries by artillery projectiles—fragments of shell casing, metallic splinters from hand grenades, shrapnel, balls, etc., rifle bullets at close range and ricocheting bullets, and secondary missiles hurled into the tissues by bursting shells such as particles of stone splinters of wood, etc.

In this group the damage to tissue is relatively much greater, the wound track is not a simple channel in the tissue but is surrounded by an extensive area of devitalized and lacerated tissue and this damaged area often extends far beyond the wound track. Foreign bodies, surface contamination and particles of clothing are regularly carried into the depths of the tissue by jagged fragments of iron from bursting shell casing and by roundish shrapnel balls.

In all these groups of injuries and this is the essential point, the relation between tissue damage and bacterial contamination is such that infection regularly occurs. In the present war this is the usual injury. General Mignon has been permitted to give the following figures taken from the statistics of the third army. During the period for example, from the first to the thirtieth of September, 1915, there were 3408 wounded, 856 (25 per cent) by rifle bullets, 1933 by shell fragments, 471 by fragments from bursting hand grenades. That is to say about 70 per cent of the injuries were from artillery projectiles.

A suggestion of the shorter ranges at which injuries from rifle and machine gun bullets are now received has been given recently by Gen Crozier. He indicated that the setting of battle sights on rifles for 547 yards is not effective on the battlefields in France where much fighting is done at ranges of 200 yards or less.

Numerous examinations have shown that these wounds are contaminated by bacteria derived from the ground of the battlefield. The clothing and skin become soiled, and particles of clothing

and surface contamination are regularly carried into the wound. The terrain in which the fighting is taking place has been long under cultivation and heavily manured year after year, and among the organisms contaminating the wound are the staphylococcus, the streptococcus, bacillus coli communis, the tetanus bacillus, the bacillus aerogenes capsulatus and the bacillus of malignant oedema organisms which one would expect to find in such soil. These bacteria are carried into contused and lacerated tissue, into an irregular deep wound lined with partially or completely devitalized fragments filled with tissue detritus and blood clot. Furthermore in this group, especially in wounds from artillery projectiles, a wad of clothing and the projectile are frequently lodged in the tissue, and threads of clothing are scattered along the track of the missile.

In June, 1915, Policard and Philip made an interesting communication. They presented the bacteriological and histological findings in the tissues bordering on the track of the projectile and contaminated by particles of soiled clothing. During the first four or five hours after the injury there is no reaction manifest in the tissue on microscopical examination, the fragments of clothing and other foreign bodies were found covered with blood clot, torn connective tissue fibers and elastic fibers and detached tissue, were scattered everywhere but there was no leucocytosis. From the fifth to the ninth hour there were signs of tissue reaction. From the ninth to the twelfth hour micro organisms similar to the bacillus capsulatus aerogenes were observed. At the end of twelve hours these micro-organisms had begun to multiply, at first localized about fragments of clothing they spread gradually over the surface from these foci. There was an influx of polynuclear neutrophile leucocytes, a certain number contained bacteria showing phagocytic activity. But these reactive changes were reduced to a minimum the tissues about the traumatized area were badly defended. These phenomena at first progressed slowly then with increasing rapidity until at the end of twenty-four hours the entire wound track was covered with micro organisms. During the first forty-eight hours the microbrial flora in the depths of the wound came from contact with the air was almost exclusively made up of anaerobic forms.

There is a period then roughly speaking during the first ten or twelve hours, when the organisms are confined largely to the neighborhood of the foreign bodies and when the wound may be said to be soiled or contaminated rather than infected. In the early part of this period during which the organisms are not multiplying they are possibly preparing for themselves a suitable environment by the formation of enzymes or other essential substances or resisting the various defensive measures of the body cells. Gradually conditions are created favorable for their

growth At the end of twenty-four to forty-eight hours the whole wound is covered with micro-organisms, cultural requirements permitting rapid multiplication have been established, the organisms have gained foot-hold in the tissues, in other words, the wound is infected. Moreover the tissue reaction is slow in developing, the great shock of the passage of the projectile has lowered the vitality of the body cells in the neighborhood of the missile. For nearly six hours there are no signs of cellular activity.

A number of conclusions regarding the control of infection may be drawn from these observations

- 1 In this group of injuries gross contamination with micro-organisms, aerobic and anaerobic, regularly occurs

- 2 The foci of infection are deep in the wound, far from the surface

- 3 The micro-organisms are implanted in a medium most favorable for bacterial growth in the midst of dead fragments of tissue, and surrounded by cells whose vitality has been more or less impaired

- 4 There is a period within the first twelve hours when the bacteria are largely confined to the neighborhood of the foreign material in the path of the projectile. The wound may then be said to be contaminated rather than infected

It is evident that the aphorism current after the South African campaign that "The patients' life is in the hands of the man who applies the first field dressing" is not true for this type of injury. It is no longer a question of avoiding secondary infection, for no measure applied to the skin can influence the infectious material deep in the tissue. This deeply implanted contamination can only be combated by active measures. By giving immune sera the body might be protected against the toxins made by the growing micro-organisms, the wound could be laid wide open, the foreign bodies removed and with them much of the gross contamination, chemicals could be applied with the idea of destroying or inhibiting the micro-organisms, the tissue about the track of the missile might be exercised, removing not only the gross contamination but minute threads and other foreign particles imbedded in the tissue, and all the devitalized and necrotic cells, leaving a clean incised wound in which the relation between infection and tissue damage is such that many of the wounds would heal without clinical signs of infection. All these measures have been used in controlling infection, and to be effective they must be employed within a few hours of the time the injury is received.

#### THE CONTROL OF INFECTION BY SERA

The value of antitetanic serum as a prophylactic is firmly established and the control of tetanus by this means has been one of the triumphs of preventive medicine in the great war. Circulars

have been issued by a special tetanus committee from time to time and suggestions regarding treatment have been made in both the French and English army and reports given of the number of cases developing in base hospitals.

The primary dose recommended is 500 units given subcutaneously as short a time after the injury as possible. Experimental evidence seems to show that immunity lasts probably only about ten days and a second dose of 500 units is given therefore in all septic wounds at the end of seven days. A number of cases of tetanus have developed after operation at the site of healed wounds weeks after the injury was received from dormant tetanus bacilli present in the scar tissue, consequently it is recommended that a prophylactic injection of 500 units be given two days before operation in all cases where the portions of the cicatrix are involved in the operative procedure. The trauma of operation is sufficient apparently to furnish conditions favorable for the growth of these bacilli, which are capable of remaining for months quiescent in scar tissue. Attention has been called also to the atypical forms which result from incomplete control by the antitoxin, tetanus appearing in one limb or one group of muscles.

Although it appears from work by Bull and Pritchell that *B. aerogenes capsulatus* produces true toxins, which cause the principal pathogenic effect of this infection, and that an antitoxin can be prepared which is curative and protective in animals, as yet this type of infection has not been controlled by this means, nor have the various vaccines given with the idea of favorably influencing the struggle of the body cells against other bacteria causing infection, proved of value.

#### CONTROL OF INFECTION BY CHEMICALS

Since the earliest days of the war a great variety of chemicals have been used, some have been given with the idea of a direct bactericidal effect, others with the notion of destroying the necrotic tissue, and still others under the conception that favorable conditions might be created in wounds by promoting osmosis and lymph flow. Not only have a number of the old antiseptics been used but many new ones have been introduced, and most ingenious and painstaking methods of application have been devised. Dakin described in the *British Medical Journal* in August, 1915 the preparation of a neutral sodium hypochlorite solution, and using similar principles Daufresne prepared a hypochlorite solution containing no boric but a mixture of carbonate and bicarbonate. Prof. Lorrain Smith introduced under the name of Eusol a calcium hypochlorite and boric acid mixture, in July, 1915. The synthetic dyes have been used extensively, and in January, 1917, Browning introduced one of them under the name of flavine (diamino methyl acridinium

chloride) Later Dakin introduced dichloral-  
umide 1 Among the older antiseptics the  
French have used ether extensively Rutherford  
Morris, under the name of Biipp, has introduced  
a mixture of bismuth, iodoform and liquid para-  
fin, which has been extensively used

Careful study has shown that the process of  
disinfection is analogous to ordinary chemical  
reaction, and consequently that intimate contact  
of the micro organisms and the chemical are  
necessary, and further, that since the antiseptic  
constantly combines in producing its effect it is  
constantly disappearing and must be renewed to  
be effective Every careful and painstaking  
method of applying the antiseptic were worked  
out with these principles in mind, the most widely  
known and most successful by Carrel and those  
working with him In October, 1915, in a com-  
munication to the Academie de Medecin he made  
a report outlining the abortive treatment of in-  
fected wounds He had studied the various anti-  
septics and decided in favor of Dakin solution on  
account of its bactericidal action in infected  
wounds, its destruction of toxins, its slight, harm-  
ful effect on the body cells, and its solvent effect  
on dead tissue He studied the most effective  
dose, the frequency of renewal of the antiseptic,  
and the most advantageous way to apply it He  
recognized that the antiseptic could only act by  
coming in intimate contact with the micro  
organisms He advised therefore, after the me-  
chanical removal of all foreign bodies, the pro-  
jectile and particles of clothing the introduction  
into every irregularity of the wound of small  
rubber tubes with properly placed side holes so  
that the wound could be flushed completely by  
the antiseptic fluid

With the idea of promoting lymph flow from  
the wound and by this means combating infec-  
tion Sir Almoth Wright early in the war recom-  
mended the use of hypertonic salt solution Col  
H M W Gray devised a means of applying this  
principle The crevices of the wound were  
packed with gauze soaked in 5 per cent salt solu-  
tion, and between the layers of the gauze tablets  
of salt were placed or small two-walled sacs  
filled with salt The hypertonic properties of  
the solution were supposed to cause a flow of  
lymph from every part of the wound This  
method of treatment seems to have the disad-  
vantage that the salt solution causes local ne-  
crosis of tissue and has a marked inhibitory effect  
on the healing process

#### THE CONTROL OF INFECTION BY THE MECHANICAL CLEANSING OF THE PROJECTILE TRACK

During the second year of the war a number  
of French surgeons advised and practised the  
complete excision of the tissue about the track  
of the missile and in suitable cases the immediate  
closure of the wound by suture In the English  
army Col Gray, in August 1915, reported on

the successful excision and primary suture of  
certain injuries by projectiles Carrel in his  
book on Infected Wounds writes that since the  
beginning of the war Depage and surgeons of  
his school have made a systematic resection of  
the skin, aponeurosis and muscle likely to mor-  
tify Probably the advantages of the complete  
removal of all the necrotic tissue about the track  
of the missile occurred to many men at the same  
time and the possibility of primary suture in the  
less extensive wounds especially at operative  
centers near the line during periods of relative  
inactivity must have been evident

In August, 1916, L Sencert, in a paper pub-  
lished in the *Bull et Mem Soc de Chir de  
Paris* gave an interesting report of results by  
this method His experience was gained from  
nearly 10 000 wounded operated on during  
twenty-three months at an advanced operating  
station At the time of the report he was chief  
medical officer of l'Ambulance Chirurgicale Au-  
tomobile No 9 He advised in all gunshot  
wounds of the second group, after careful X-ray  
examination, the excision of the necrotic tissue  
contiguous to the path of the projectile The  
skin was sterilized and excised about the wounds  
of entrance or exit the cellular tissue, the apo-  
neurosis and the muscle were dissected away by a  
sharp knife the limit of the tissue to be removed  
was determined by carrying the dissection suf-  
ficiently wide to insure its passage through sound  
tissue, which was recognized by free hemor-  
rhage, all loose bone fragments were removed  
and the bone carefully excised wherever touched  
by the projectile He pointed out that if the  
missile passed close to a blood vessel its walls  
were inevitably damaged, and the blood vessels  
therefore along the path of the missile should  
be divided and excised Large nerves were re-  
spected This radical procedure converted the  
lacerated, contused wound contaminated by for-  
eign material into an incised wound He in-  
sisted on the most exact hemostasis and used  
no chemicals of any sort Sencert called atten-  
tion to the fact that he had only cut away tissue  
which would eventually slough and that by this  
means as he graphically described it the incubator  
of the micro organisms had been destroyed  
(*supprimant leur chambre d'incubation*) He  
had come to this procedure little by little, at first  
using antiseptics to some extent, then suppressing  
them altogether and finally and fully adopting  
asepsis He closed the wounds by suture, care-  
fully obliterating all dead spaces His results  
were very satisfactory He reported for ex-  
ample twenty-two exploratory arthrotomies on  
the knee in all there had been healing by prim-  
ary union In ten lateral arthrotomies one only  
was unsuccessful The wounded reached his  
ambulance as a rule from two to ten hours after  
the injury was inflicted

A year later Depage made an interesting report on injuries of the knee joint. For a year he had used the Carrel system, that is, the introducing of Dakin solution through small tubes placed in the joint after the wound track had been cleansed mechanically and the projectile and all foreign bodies removed. Since July, 1916, after the excision of the tissue about the path of the missile, he had closed the synovia and the skin by suture. The recoveries with restoration of movement under this treatment had been 80.36%, under the Carrel system the recoveries were 40%. Under the Carrel treatment in 15% amputation of the thigh was necessary, none were performed during the second period in which the joint was closed after mechanical cleansing.

Today the removal as far as possible of the necrotic tissue about the projectile track is recognized as essential. It is generally admitted that the micro-organisms causing gas gangrene grow on dead or devitalized tissue, and that removal of this tissue deprives them of their pabulum and is the most successful means of combating this form of infection.

The first part of this procedure has been adopted by the most ardent adherents of antiseptics. Its importance is emphasized by Carrel in a chapter on the technique of sterilization. He writes, "No amount of scrubbing and mopping is capable of getting rid of the minute threads of wool and cotton from clothing embedded in the tissue. Carrel advises the resection of the muscular wall to the thickness of about two millimeters. Obviously, the amount must be regulated by the extent of the necrosis and this is dependent upon the violence to the tissue from the mass and velocity of the projectile. The rule given by Col. Gray or Sencert of excising until there is a fresh-bleeding surface seems more practical. But about the second part of the procedure, that is, the immediate suture of the wound, there is much controversy. Primary suture, however, has gained more and more adherence. At the surgical conference of the Allies at Paris, in November, 1917, the statement was made that the disinfection of wounds had passed from the domain of the chemist to that of the surgeon, and that primary suture had taken the place of secondary suture and become the method advised. Gen. Bowly in the *British Medical Journal*, of March 23rd of this year shows that these principles were first recognized as advantageous for the knee joint, then for the head, and later for the lung and abdomen, and finally for the extremities.

Obviously, success is dependent on the care and accuracy with which the dissection can be carried out. It requires skilled and experienced surgeons, well equipped hospitals and an X-ray apparatus and it is fair to say that the greater the pressure of work and the greater the neces-

sity for speed, the less certain the results. There are limitations fixed by the time at the disposal of the surgeon and the anatomical region wounded. Both limitations are made the greater in multiple injuries, and multiple injuries are common in wounds from artillery projectiles. The time element is all important, the shorter the period between the receipt of the wound and the time it comes under treatment the more satisfactory the result.

For the success of the primary suture, rest after operation is essential, if the wounded part is disturbed tissue planes are displaced and oozing may occur, the delicate balance between micro-organisms and tissue cells is upset and infection results. Hence, the rule only to do the primary suture in cases where the patient can remain at the hospital one week after the operation.

Whether or not a given wound is suitable for primary suture must be in the end a question dependent on the judgment and experience of the individual surgeon. If it is deemed inexpedient to suture, the wound may be lightly packed and closed, if all the conditions are favorable, on the fourth or fifth day. This procedure is spoken of as delayed primary suture. Or the technique of Carrel may be followed, that is, after the mechanical cleansing, the wound is flushed with Dakin solution through tubes placed in every pocket and crevice every two hours. Bacteriologic control is noted every two days, when the smears show no microbes or only one to five or six fields the wound is sutured after freshening the edges. Or other antiseptics, bipp or flavine are used after excision of the wound, or no antiseptic is used, the wound being simply packed with sterilized gauze. Leriche last year reported very favorable results from exposing the open wound to the sunlight. He has obtained sterilization, and has been able to close wounds by secondary suture in four to six days. He does not advise it for wounds in the pelvis and upper part of the thigh where exposure is difficult.

Of all the methods of treating the wound where primary suture is not possible the Carrel technique seems from the reports from base hospitals to offer the best results. The favorable action of the Dakin solution, however, is being more and more attributed to its property of destroying dead tissue, the flushing of the wound continues the removal of necrotic particles. Emphasis is placed on its proteolytic rather than its bactericidal properties.

The control of infection is insured by a sanitary organization which will make it possible to treat the wounds in a well equipped hospital by skilled surgeons, within ten to twelve hours after the injury is inflicted.

On the systematic use of tetanus antitoxin

On the early and complete excision of the tissue about the path of the missile

Antiseptics play an important but secondary or auxiliary part to surgical measures, where primary suture is inadvisable

### Discussion

MAJOR LEON T. LEWALD, New York City I am very much interested in the papers and as the X-ray service of the war is very closely related to the surgical service, I hope it will not be inappropriate to discuss one or two points that are so closely related

In the first place I should like to ask Captain Wilson if it would be possible to have this splint made of aluminum. All our splints in our service unfortunately are made of dense metals, such as steel, and most of them are broad in construction, and in endeavoring to radiograph the arm while in the splint, it is exceedingly difficult to get around the opaque material. I think it is perfectly possible to make a large portion of the splints, at least, out of aluminum, and to have that absolutely adhered to. It would aid very materially radiographic examination, for broad iron or tin splints almost certainly come right over the area which you wish to radiograph at least in one direction.

Dr. Gibson has spoken of the methods of the French and British Radiographic Service. We, of course, have the advantage of their experience and just a year ago to day the American Army started in to develop a very extensive X-ray service. The specialization of the Roentgenologist for the Army was the first specialization in the service. That was followed very shortly by the specialization along the surgical lines, orthopedic, neurologic, etc. but the X-ray service was early given a very free hand in devising apparatus to meet the situation.

DR. REGINALD H. SAYRE, New York City. You might be interested in seeing Captain Wilson's splint. It is very like the one we have been using in cases of paralysis of the shoulder for some years past, since the last poliomyelitis epidemic in New York and I was accustomed last winter in teaching the classes of Army Surgeons, who came to me in relation to orthopedic work, to make for themselves similar braces out of long pieces of wire which they bent with a pair of monkey wrenches. In most of these supports as usually constructed the upright legs of the support stop near the lower border of the ribs and the weight of the patient's arm held out at right angles to his body causes the trunk to bend at the waist whereas if these upright rods run farther down so as to get support from the pelvis the leverage is very much better and your purchase in pulling traction on the broken fragments of the arm against the entire trunk wall is a great deal better than when you are simply pressing against the ribs.

I should doubt the advisability of making this support of aluminum as Dr. LeWald suggested

unless the wire was much larger than what is used here, or unless a prop was run out to the elbow from the iliac crest to prevent the splint from buckling.

DR. GEORGE D. STEWART, New York. I think many of us, until recently, have had the feeling that army surgery was a sort of rough and ready business. Since the beginning of the war, I have changed my mind. If I had not, I would rather keep it to myself, and it now seems to me that this war is affording medical men the most enormous, and the most pathetic experimental surgical laboratory the world has ever seen.

Developments in the treatment of fractures in this war are very interesting. Let us go back just a little, only four hundred years, and we find that Ambrose Pare was treating compound gunshot fractures by pouring boiling oil into the wounds. This treatment was not original, but came from a still older man, John of Vigo. Pare relates that at the siege of Milan he looked around to see what the other surgeons were doing hoping to find something new in the treatment of gunshot wounds. He found that they were all following John of Vigo's treatment, that is boiling oil. On one occasion, after a big drive, his oil gave out and he had to treat the wounds with something else, so he made a mixture of white of egg, Venice turpentine, oil of roses, and some other ingredients which I have forgotten—it does not matter, this combination is bad enough—and introduced this into the wound. He went to bed with a troubled conscience, thinking of the poor fellows who had been deprived of the boiling oil. Following a wakeful night, which so many doctors experience after having subjected their patients to severe operations, he arose early, went to see his soldiers and was amazed to find that those who had been treated without the boiling oil were free from pain and doing well. So he changed his treatment and never used the oil as an antiseptic again.

Now despite the fact that most people believe that Lister introduced antiseptics, it was along antiseptic lines that the treatment of wounds was conducted even before the time of Pare and along the same lines it has been continued until this last and most recent of wars. In this war, many antiseptics have been tried and recommended but it seems extremely probable that dissection of the devitalized tissue is the most effective factor in the treatment of these wounds.

We are much indebted to Dr. Martin for the clear way in which he has given us his information grouping the treatment into Antiseptics, sera and excision. I think nearly everyone who has followed the present treatment of gunshot wounds, either close at hand or from a distance through the literature must have come to the conclusion that Dr. Martin has here expressed, viz. that sera have not given great help, that antiseptics are valuable but that none is specific,

finally, that excision of the devitalized tissue has been a distinct and remarkable advance in surgery

DR WALTON MARTIN, New York City I wish to emphasize the value of the X-ray examination in determining the wound track for excision. The bullet track is often difficult to follow and the recognition of the projectile in the tissue enables one much more easily to follow the damaged tissue from the wound of entrance. A curious instance occurred to me in the history of war wounds as I listened to Dr Stewart Celsus, writing in the second century, has a few lines on the necessity of the removal of the lead bullets. I suppose the weapon used in hurling them may have been a sling.

MAJOR GEORGE EWART WILSON, Toronto, Canada Major LeWald suggested the use of aluminum. I haven't tried it, but I think it would have to be rather bulky in order to get the requisite amount of rigidity. Aluminum is used a good deal for temporary splints in the army, and is very easily bent and easy to work with, but I don't think it would be advisable in my variety of splint. It is best to get stereoscopic X-rays as the lateral is difficult.

Dr Sayre suggested putting the support lower down. Of course, that would give a greater degree of support to have the plaster cast on the pelvis but then you lose, to a great extent, the movement of the dorsal lumbar vertebrae, that is, you can't rotate it so well, and if you are particular in putting on your plaster cast to see that the patient is in the correct posture, there will be no difficulty of the patient's leaning to the fractured side.

## THE EARLY DIAGNOSIS OF INTRALARYNGEAL CARCINOMA \*

By D BRYSON DELAVAN, M.D., F.A.C.S.,  
NEW YORK CITY.

**O**F the several forms of malignant disease which may occur in the larynx, by far the most common is laryngeal carcinoma. For more than thirty years past two propositions have been conceded with regard to it. First, that the operative treatment of the condition offers the best prospect of relief, and, second, that in general the earlier the surgical interference the better the prospect of the patient. Early diagnosis therefore becomes a matter of supreme importance.

Just here we are often confronted with difficulty. In many cases the difficulties in the way of early diagnosis have been so great that, for a while at least, not even the skilled specialist has been able to solve them, while in other hands the disease has been unrecognized until the time for operation has passed. These difficulties have

formed the basis of historic controversies and of an extensive literature. Unfortunately, the few early signs which are even suggestive of danger are often both unreliable in character and hard to detect.

Cancer may originate primarily either inside the larynx or outside of it. This paper will deal exclusively with the intrinsic variety. Occurring as a metastasis, diagnosis should be easy. But this condition is rare.

Intrinsic cancer of the larynx is generally primary. While it may arise from any point in the larynx, it originates most commonly from one of the true vocal cords or from some place in its vicinity, notably the sacculus laryngis. Thence it may extend backwards, involving the posterior commissure and spreading to the opposite side.

Taken in the order in which the local symptoms are apt to occur, there may be present the following:

- 1 Hoarseness
- 2 A local lesion
- 3 The occasional occurrence of a peculiar form of pain
- 4 Muscular infiltration

1 *Hoarseness*—This symptom often considerably precedes others. Inspection of the larynx may reveal little or nothing to account for it, although there is generally some sign of hyperaemia in or near the neighborhood of one vocal band, the other one being normal. The vocal disability is generally persistent and progressive. It may or may not be accompanied with cough, although it is seldom that cough is present.

2 Following the impairment of the voice, a local lesion of some kind begins to manifest itself. The picture presented in early laryngeal carcinoma will vary greatly, both as to the appearance and the position of the new growth. Originating below the vocal bands it may be impossible of demonstration by laryngoscopy until long after it has first established itself. Located above or upon the vocal bands it is generally easy of demonstration. In this position it frequently arises from the true vocal bands, from the sacculus laryngis, or from the ary-epiglottic folds, and may assume one of several different forms. First, a distinctly localized and somewhat superficial excrescence, warty in character, of a white or grayish-pink color, and surrounded by a narrow red zone of inflammation. This inflammatory zone, however, is by no means invariably present. In some cases a better idea of the growth may be obtained by blanching the neighboring parts with adrenalin and thus making more conspicuous the more deeply congested tissues of the growth, especially at the periphery of its base. Sometimes these growths so closely resemble true papilloma as to make a positive visual diagnosis impossible. Second, a deep,

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 21, 1918.

fairly localized growth with a reddened, irregular, or nodular surface, in some cases presenting an uneven, fringed like surface upon the affected vocal band. Third, a variety beginning indefinitely and extending for a considerable period of time in the form of a general diffuse infiltration of the ventricular bands. In the sacculus laryngis or in the aryepiglottic folds it usually appears in the form of a definite growth, pink in color and of an uneven or nodulated surface.

3 *Pain*.—In many cases of epithelioma of the larynx, as in superficial epitheliomas in other localities, one of the earliest signs of trouble is a peculiar pain, the character of which is a distinct sensation like that caused by the prick of a needle, coming on suddenly and without premonition and quickly dying away, and distinctly originating at the site of the growth. This sensation must not be confused with the lancinating pain which radiates from the larynx to the pharynx or the ears late in the history of the case, nor with the dysphagia which also may occur after a considerable extension of the ulceration within the larynx has taken place. It is entirely different and distinct from either of these and is similar to the prickling sensation sometimes experienced in superficial epitheliomas of the skin. While not always present, the writer has observed it in a great many cases as among the earliest recognizable signs. Again, pressure upon the affected side of the larynx will often cause pain. The occurrence of pain is a more definite and distinct symptom, severe in character and lancinating from the larynx to the ear seldom takes place until the disease has clearly pronounced itself, although even to this rule there are occasional exceptions.

4 *Muscular infiltration*.—Shortly after the establishment of the new growth it is often possible to observe a commencing failure of complete motion on the affected side of the larynx. This is due to infiltration of the muscles in the neighborhood of the neoplasm and once beginning it is likely to be progressive and to increase until the movements of that side have become completely abolished. As an early diagnostic sign this feature is very valuable. Glottidular involvement, dysphagia, dyspnoea, and cachexia are not to be expected in the early stage of laryngeal cancer.

Since this paper deals only with the early diagnostic signs of laryngeal carcinoma we will now consider the means external to the larynx by which the diagnosis may be sustained.

*First* The age and sex of the patient are important factors. Laryngeal carcinoma is unusual before the age of forty although it has been observed in much younger patients. The tendency to its development increases rapidly with advancing years. About 90 per cent of all cases occur in males. That there are exceptions to these rules is suggested by the fact that the

writer has now under observation a lady of thirty who has suffered of complete extirpation of the larynx for an extensive epitheliomatous growth. The immoderate use of alcohol and of tobacco, the existence of tertiary syphilis, and the persistence of chronic inflammation in the larynx are believed to be predisposing factors in the development of laryngeal carcinoma.

*Second* The absence of symptoms suggesting other diseases or conditions likely to simulate laryngeal cancer—such as syphilis, tuberculosis, gout, lupus, benign growths, pachydermia laryngis, chronic laryngitis, perichondritis, and laryngeal paralyses. Hoarseness associated with congestion or tumefaction of one vocal band and not otherwise explained may be suggestive of syphilis, tuberculosis or gout. After middle age it is suggestive of malignant disease. Ordinary laryngitis would generally be bilateral. Benign growths may often be differentiated by the skillful diagnostician, although it must be admitted that in some cases, even under the most experienced observation, certain growths may be very difficult of identification. Pachydermia laryngis, a condition unusual in this country, is not uncommon in Europe, especially in some parts of England. As a rule, it may be recognized without much difficulty, although in some cases the establishment of a positive diagnosis can be effected only with the lapse of time. Primary lupus of the larynx is rare. The existence of the disease in other parts would tend to establish the identity of the laryngeal lesion. Simple laryngitis, perichondritis, and paralysis from non-malignant causes may generally be recognized.

In the early stages a warty growth on the vocal bands or the ventricular bands may resemble a benign papilloma, but appearing late in life a unilateral growth should always excite suspicion, especially if firmly fixed and infiltrating the subjacent structures, with marked impairment of vocal cord movement and of a white or whitish-gray color and attended with pain. Its occurrence on the posterior third of the vocal band or in the posterior commissure would suggest malignancy. If the growth originates in the ventricle and simply overlaps the cord, the vocal band movements will probably not be impaired. The appearance of a papillomatous margin along the greater part of the length of the vocal band or the embedding of the cord in a dull white mass occurring in a patient past middle life should be regarded with grave suspicion.

A growth on the epiglottis or ventricular bands might be mistaken for a gumma. But a gumma is rapid in development, ulcerates early, is painful, and generally yields to iodide of potassium. When with perichondritis ulceration has taken place it may be difficult to determine from the appearances between a tertiary lesion and the breaking down of a malignant growth. Here

again the administration of iodide of potassium will determine the nature of the growth.

The differentiation between carcinoma and tuberculosis of the larynx will generally be established by the physical signs found in the chest. In primary tuberculosis of the larynx, however, considerable difficulty may arise. In such a case the diagnosis may sometimes be established by means of cultures made directly from the laryngeal secretion, or by the tuberculin test. The presence of tubercle bacilli, however, may not necessarily exclude carcinoma.

In the great majority of cases the question will lie between carcinoma and syphilis. Case after case has come under the observation of the writer where a positive diagnosis of cancer has been made under conditions where a fair degree of observation and knowledge would at once have excluded malignancy. There are certain cases, however, in which the laryngoscopic appearances are absolutely non-conclusive. In these, if the case be actually specific, as we have said before, the diagnosis may be established by the administration of the iodide. Certainly, under specific treatment the laryngeal lesion disappears sometimes with wonderful celerity and the patient is cured. Unfortunately this is not always the case, for in carcinoma the first effect of the iodide may be to produce visible improvement, and this improvement may under the continued administration of the medicine progress for a number of weeks, thus misleading the observer. However, the administration of the iodide is a most valuable resource, and has many times resulted in the cure of cases to all appearance unquestionably malignant.

Laryngeal carcinoma may not only resemble other forms of disease but may actually be associated with them. Thus it may occur in a patient suffering from tuberculosis. Attention has more than once been called to the possibility of the dependence of the malignant condition upon the other. It is easy to understand that with the existence of the pulmonary lesion a thickening of the mucous membrane of the larynx not sufficiently marked to excite the suspicion of malignancy might readily be mistaken for tubercular laryngitis. Again, the development of a malignant growth in the larynx of a person suffering from tertiary syphilis is by no means uncommon. In the opinion of some, this dyscrasia may actually be a predisposing cause. As a matter of course, such complications add greatly to the difficulty of early diagnosis.

All things considered the microscope must for the present be the chief source of information. By its use the demonstration of the presence of a new growth of definite variety and type should at once determine the nature of the case. Even this hopeful statement must be received with reserve and acted upon with caution. As every histologist knows, often from sad experience,

positive knowledge of the precise structure of a growth cannot be gained with certainty from an examination of its peripheral parts. Nothing short of a careful study of the whole mass of the tumor from its surface to its base, will give any certain knowledge of its true character. Moreover, the malignant elements may be slow in their development. The most famous illustration of this is found in Virchow's report in the case of the late Emperor Frederick. The largest fragment possible of removal from the posterior commissure, the location of the growth in this case, showed under the microscope the condition known as "Verruccia." As events proved, the base of the growth was malignant. Time and again in other hands the intralaryngeal removal of fragments for microscopic examination has proved misleading. This method of diagnosis has therefore fallen into disrepute. Some more certain and reliable means is absolutely necessary. This we find in thyrotoimy.

Radical as this measure may appear, experience has proved its value. About thirty years ago Sir Henry T. Butlin of London proposed that, given a laryngeal tumor of doubtful character, the larynx should be opened, the growth carefully examined—cocaine having been applied to constrict the neighboring blood vessels and thus isolate the growth—a fragment of the growth including its base removed, immediate microscopic examination made of frozen sections, and in case the growth proved to be malignant such parts of the larynx as were diseased at once extirpated. The great success of Butlin's work has proved the value of his method.

The intra-laryngeal removal of fragments of suspected malignant tissue for microscopic examination is most unsatisfactory, while the injury thus inflicted upon the tumor is almost certain to be followed by its rapid degeneration and extension. Among the most experienced observers it has become an axiom that tissue should never be forcibly removed from a malignant growth in the larynx unless the operator is prepared to proceed at once with the radical operation in case the diagnosis of cancer is established. John N. Mackenzie long ago taught that excision of fragments of tissue for microscopical examination is objectionable because (1) It opens the way to auto-infection and metastasis, (2) it stimulates the growth of the disease, and (3) it is often inconclusive and misleading, and sometimes practically impossible. At present the almost unanimous consensus of opinion is in accordance with Mackenzie's view.

Many years ago the writer expressed the hope that, in view of the slender resources at our command for the early diagnosis of laryngeal cancer, some test might be found for it similar to the tuberculin test for tuberculosis. Unfortunately the three decades which have passed since then have brought little encouragement. Thirty years

ago when the method of transillumination was in its infancy, Voltolini suggested that this method be applied to the early detection of laryngeal growths. It has proved a failure. Again, the expectations aroused by the success of fluoroscopy and skiagraphy in other directions have proved absolutely disappointing in their application to the larynx. The method of Abderhalten exerted great hope, but that too has yielded nothing but disappointment. The fate of all three of these resources has depended largely upon one and the same reason, namely that in the early stages of laryngeal carcinoma the growth is so insignificant in size as to escape observation by transillumination and by the X ray method. Even if the Abderhalten test had proved its ability to demonstrate the presence of a carcinoma of considerable size otherwise unrecognizable, the minute and superficial beginning of the disease in the larynx would probably offer little evidence in the blood of its presence. Thus we would find ourselves in exactly the same position in which we stood thirty years ago if the present day observers were as expert laryngologists and as well trained observers as were their predecessors of the generation which has passed—men like Solis Cohen, Morell Mackenzie, Butlin, Masser, Ingals, Schiotter and the like. In case of doubt the microscope must still be our final reliance. Let us hope that ere long something better may be revealed.

## THE SURGICAL TREATMENT OF CANCER OF THE LARYNX WITH REPORT OF CASES<sup>1</sup>

By JOHN McCOY M.D.  
NEW YORK CITY

**A**S a preface, the writer wishes to emphasize two points:

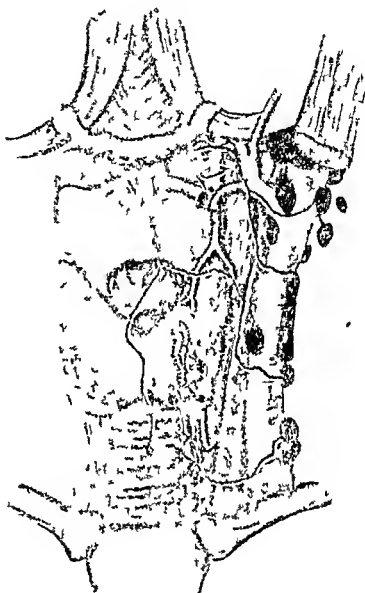
1 That laryngectomy can be accomplished with as little reaction as the removal of a tumor from the arm or leg.

2 That this is accomplished by insisting upon (a) thorough sterilization of the mouth and nasal cavities along with other sterilization and preparation, and (b) anesthesia directed away from the lung, that is by local anesthesia or by colonic ether anesthesia. The writer prefers the latter.

In this paper it is our purpose to describe in succession:

- 1 The lymphatics of the larynx.
- 2 The location of cancerous growths.
- 3 The surgical procedures adopted for removing them.
- 4 The surgical technique employed by the writer, with a report of the cases operated by him.

### 1 The Lymphatics of the Larynx (See illustration)



SHOWING EXIT OF LYMPH VESSELS FROM LARYNX AND THE NODES INTO WHICH THEY EMPTY

(Adapted from Keen's Surgery after Most)\*

The interior of the larynx is lined by a network of lymphatics which drains the larynx in two directions. One, the supra-glottic which drains the tissues above the glottis including the false cords, the arytenoids, inter-arytenoid space, aryteno-epiglottic folds, and epiglottis. The other infra-glottic which drains the tissues below the vocal cords. At the vocal cords, the lymphatics are very scant. On the posterior wall of the larynx the lymphatics of the supra and infra-glottic regions intercommunicate very freely, anteriorly they do not communicate. The radicals arising from the supra-glottic network run toward the epiglottis and the aryepiglottic folds, then pierce the thyrohyoid membrane at the point of entry of the superior laryngeal artery. After this they divide into three sets:

- 1 Crosses the hypoglossal nerve and ends in the gland situated just below the posterior belly of the digastric muscle.

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 21 1918

2 A horizontal group ending in glands situated on the internal jugular vein at the level of the bifurcation of the common carotid artery, and

3 A descending group ending in glands of the same chain at the level of the lateral lobes of the thyroids. The different vessels of the *infra-glottic region* are divided into anterior and posterior. The anterior pierce the crico-thyroid membrane and end in pre-laryngeal and pre-tracheal glands, which drain to the middle, or inferior sternomastoid chain. The posterior pass over the crico-tracheal fascia at the junction of the lateral and posterior aspect of the trachea and end in three to five glands, running parallel with the laryngeal nerve. They drain the thyroid body, inferior pedicle of the larynx and the cervical portion of the trachea and oesophagus. The lymphatics from the second ring of the trachea drain down into the mediastinum.

In 1850 Krishaber divided cases of malignant diseases of the larynx into intrinsic and extrinsic. Growths are said to be intrinsic when they are located on the true or false vocal cords, the ventricles or parts immediately below the vocal cords. They are said to be extrinsic when they involve the arytenoids, inter-arytenoid space, aryepiglottic folds, or epiglottis. Intrinsic cancer attacks most frequently the vocal cords, next in frequency the false cord, and then the sub-glottic space. They all obey the general law of malignant epithelial growths, to spread in the direction of the lymphatics.

The surgical procedures adopted for the removal of malignant growths in the larynx are as follows

#### 1 Intra-laryngeal removal

Indirect method

Direct method

2 Extra laryngeal removal by means of (1) sub-hyoid-pharyngotomy, (2) thyrotomy and crico-thyrotomy

3 Partial laryngectomy, and

4 Total laryngectomy

1 Intra-laryngeal removal, successful cases have been reported by this method, but the vast majority attempted have been unsuccessful, so that it has been considered rather a tampering operation, more dangerous in its possibility of stimulating a growth to activity than potent in its possibility of thorough removal. However, since the adoption of suspension laryngoscopy there would seem to be a field for this method in the case of a growth limited to the middle or anterior portion of the vocal cord.

#### 2 Extra laryngeal removal

*Sub-hyoid pharyngotomy* has been practiced for the removal of growths in the upper part of the larynx, but has now practically been abandoned because of the extremely unsatisfactory results and because the technique of suspension

laryngoscopy has made it possible to accomplish all that this operation could do. It consists of a preliminary tracheotomy, followed by an incision horizontally across the thyro-hyoid membrane down to the pyriform fossa on each side and then throwing the thyroid cartilage forward we get a very good view of the larynx. It is mentioned only to be condemned.

*Thyrotomy or Crico-Thyrotomy*—This method was first performed by Bauer in 1833. Bruns, 1878, collected 19 cases operated by this method in which the results were very poor. Butlin, 1889, again advocated this operation, and in 1900 reported 27 cases with very favorable results. In 1908 he reported 21 personal cases since 1890 with one death and 12 alive and well three years after operation, and Semon reported 19 personal cases with one death, 76 per cent of cures. The indications for this operation as set forth by Semon are as follows: "All intrinsic cases of cancer not extensive, not too near the posterior wall and not infiltrating the cartilages ought to be treated by thyrotomy."

The technique of the operation is as follows. At first a preliminary low tracheotomy is performed, then the larynx is swabbed with adrenalin and cocaine. The upper end of the trachea is packed with gauze and the patient is placed in the Trendelenburg position. The thyroid cartilage is now split vertically in its median line, after incising the crico-thyroid or thyro-hyoid membrane. The lateral halves of the thyroid are now retracted, and if this does not allow a sufficient exposure of the field of operation, the cricoid cartilage can be split in its anterior median line and this will give us a greater exposure of the field. The lower pharynx and oesophagus are packed off to prevent secretions from entering the field of operation. The mucous membrane surrounding the growth is incised down to the cartilage and as wide of the margins of the growth as possible, and then with a periosteal elevator a complete excision of the growth and membrane down to and through the periosteum is performed. Bleeding is controlled by means of pinching the vessels with a clamp or by means of the electric cautery point. The thyroid cartilage is sutured, if the cartilage is soft enough to permit of it. Otherwise the cut edges are approximated and the tissues over it are sutured. The patient's head is kept in a very rigid position for from 18 to 24 hours. The laryngeal cavity may have to be packed. If this is so, it is removed at the end of two days and the tracheal canula is removed on the third day. Jackson prefers to do this operation without tracheotomy. The larynx should be inspected once a week for several months after this to note any signs of recurrence.

*Partial or Hemi-Laryngectomy*—This operation is usually performed after a thyrotomy or

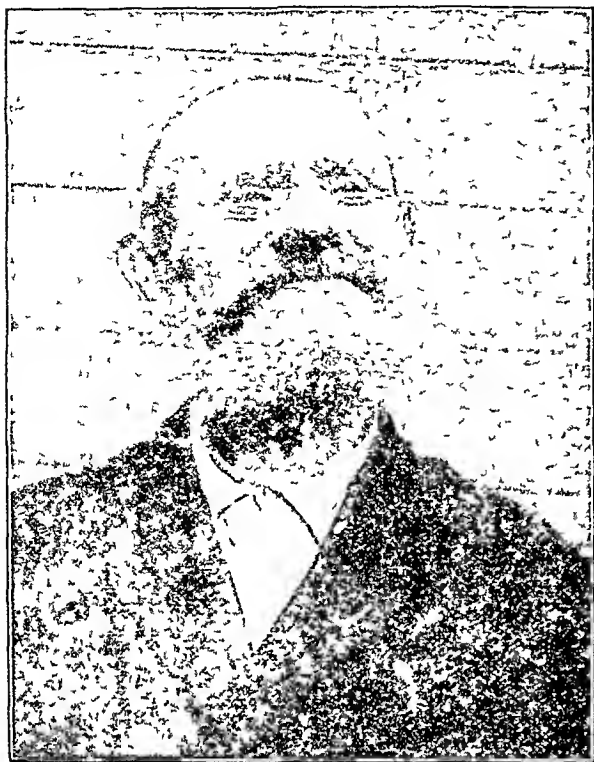
a crico-thyrotomy, at which time it is discovered that the growth is too far reaching for the simpler operation. The technique employed is the same as for the beginning of the crico-thyrotomy operation, then horizontal incisions are made at the upper and lower end of the vertical incision one and a half inches wide. The affected half of the thyroid cartilage is dissected down to its attachment to the oesophagus and this half of the larynx is completely dissected out, down to its attachment to the oesophagus in the median line. If it is possible to leave a small portion of the lower border of the thyroid cartilage on the affected side, it will serve as a support and will give less chance of stenosis. All bleeding vessels are clamped or tied off and the wound in the neck is completely sutured. The advantages of this operation are that it allows the patient to breathe through the natural passages after it and insures them somewhat of a speaking voice. The disadvantages are that it allows infected materials from the granulations in the wound to drop directly into the trachea and bronchi and very materially predisposes to a septic pneumonia. These patients are fed through the oesophageal catheter introduced through the nose for several days after the operation.

**Total Laryngectomy**—The indications for this operation are extrinsic cancer infiltrating both sides of the larynx above the glottis. The technique adopted by the writer in operating these cases is as follows. When a tentative diagnosis of malignancy has been made, we first order a Wassermann blood test to be made. The patient is also referred to a competent dentist for thorough cleansing of the teeth including the removal of decayed roots and thorough removal of pyorrhea and pus cavities. The nasal condition is also examined and accessory sinus disease eliminated, after which the patient is ordered a mouth spray of 25 per cent alcohol followed by a spray of 25 per cent argyrol three times a day. The patient is then ready for removal of a section from the growth for microscopical examination. This is most easily performed through Jackson's laryngoscope. If the diagnosis at this time is practically unquestioned in the mind of the operator, a preliminary low tracheotomy is performed just before or after the section is taken. The tracheotomy is performed as follows. Under cocaine infiltration anesthesia a transverse incision is made about one-inch below the cricoid. Dissection is continued until the tracheal rings are exposed then after the method advised by Crile a dissection is made on one side up along the larynx and down the side of the trachea which is packed with gauze. After all bleeding vessels are tied the trachea is opened at the level of the second and third rings and the tracheal cannula is introduced, after first picking gauze down on

both sides of the trachea. If large glands have been found on palpation of the neck, these are now dissected out by incision along the anterior border of the sternomastoid muscle, raising this muscle and removing any enlarged glands found under it and lying upon the jugular vein. The patient is then put to bed in a room in which a croup kettle is moistening the air. The mouth and teeth are sprayed daily with alcohol solution and the argyrol solution and at the end of one week during which we have received the pathologist's report, we are ready to proceed with the extirpation of the larynx. The patient is prepared for oil ether colonic anesthesia by the method of Swathmey. At the appointed hour for the operation the patient is brought up to the operating room, anesthetized, and we then proceed with the operation unhampered by the anesthetist.

An incision is made from the hyoid bone with an one-half inch of the preceding tracheotomy incision. The thyroid and cricoid cartilages are exposed and after the thyro hyoid and sterno thyroid muscles are severed from their attachment to the thyroid cartilages the thyro hyoid and crico thyroid membrane are freely exposed. The tissues in the neighborhood of the superior laryngeal nerve and also the thyro hyoid and crico-thyroid membranes are infiltrated with weak cocaine or novocaine solution. The dissection is then continued down the sides of the thyroid and cricoid until we reach the oesophagus. A horizontal incision is now made severing the cricoid cartilage from the first ring of the trachea, and when we reach the posterior border of the cricoid a tenaculum is placed within the cricoid. It is pulled forward and its posterior aspect is dissected away from the oesophagus up to the arytenoid cartilages. With an incision directly across the thyroid-hyoid membrane and all the way through it, we now detach the larynx completely by lateral cutting through the cornua of the thyroid. The opening into the lower pharynx is then sutured together without perforating the mucous surfaces and the tissues above this are sewed together by blanket sutures. The trachea is dissected free for one or two rings and stitched forward to the skin of the neck by heavy sutures. Several stitches are taken to pull the skin together and the upper end of the wound is freely picked with gauze, which is changed twice every 24 hours. The usual aseptic external dressings are applied and the tracheal tube is placed in the opening in the trachea. The patient is put to bed with the foot of the bed elevated for 24 hours after which he is encouraged to sit propped up in bed except at the time of the dressings. His feedings are taken through an oesophageal catheter introduced through the nose. This is continued for one week when he is encouraged to swallow liquid food. If there is no leakage into the wound in the neck he is

placed on liquid and soft foods. The external wound is allowed to heal by granulation, which it does in from three to four weeks.



PATIENT WITH LARYNGECTOMY THREE YEARS AGO  
NO RECURRENCE TO DATE

The cases operated by the writer includes

- 1 Hemi-laryngectomy
- 2 Total laryngectomies with partial resection of oesophagus
- 3 Total laryngectomies

Mr Oscar K——, age 52, Russian, occupation, pedler

First seen February 1, 1916. Gave history that he had cough and hoarseness for ten months. Examination of the larynx showed a profuse infiltration involving the right true and false cords, the right arytenoid, and extending across the inter-arytenoid space. No enlarged glands could be felt externally in the neck. A Wassermann test was ordered and proved negative.

On March 9th 1916, a low tracheotomy was performed and immediately following this a section for microscopical examination was removed from the larynx through the direct laryngeal speculum. The report returned showed the growth to be epithelioma.

On March 16th, colonic anesthesia was given and a total laryngectomy was performed after the method just previously described.

The washing of the mouth with argyrol and alcohol was continued thrice daily. The wounds were dressed twice daily and the patient was dis-

charged from the hospital, cured in four weeks. No recurrence to date.

*Case No 2*—William M——, age 44, native of the United States, occupation, merchant.

Was first seen August 24th, 1916. At that time said he was troubled with hoarseness for eight or ten months. He said that he smoked eight or ten cigars a day.

Examination showed an infiltrating mass on the right side of the larynx involving the tissues of the false cord and arytenoid and extending across the inter-arytenoid space. No glands could be felt externally in the neck. A Wassermann reaction, which had been made before he came to the writer, was negative.

On September 13th a low tracheotomy was performed, and after this a section was removed for microscopical examination. The growth proved to be epithelioma.

On September 20th the operation for total laryngectomy was performed and the wound treated and dressed in the usual manner until the patient left the hospital, cured, three weeks later. The convalescence of this patient was without rise of temperature or incident, except that on the second day after the operation his pulse rose to 190 and his face gave a very pale and anxious appearance. There was no rise in temperature with this, so it was decided that the tachycardia was due to pressure of the packing gauze on the vagus. The packing was removed, and within two hours the patient's pulse was normal.

*Case No 3*—George N——, age 54, native of Germany, occupation, car inspector.

First seen November 12, 1916. At this time gave history of hoarseness for four months, with pain on swallowing for one month.

Examination of the larynx showed infiltration and ulceration of both arytenoid, and this extended over and down into the first part of the oesophagus. Externally a large gland, the size of a chestnut, could be felt in the neck. A Wassermann test proved negative.

On November 16th a low tracheotomy was performed, the gland dissected from the neck and a section of the growth was removed for microscopical examination. It proved to be epithelial carcinoma.

On November 23rd a laryngectomy was performed as described. On removing the larynx it was found that the upper end of the oesophagus for one inch was entirely involved, so that it became necessary to resect this portion of the oesophagus completely and the upper end of the oesophagus remaining was stitched to the neck wound just above where the trachea was stitched in the neck. This patient convalesced very nicely with practically a normal temperature for one week.

Owing to the unavoidable absence of the writer the wound was dressed by the house surgeon, and due to a misunderstanding on his part, the gauze in the upper neck wound was not changed, but was little by little pulled out and cut off. This proved to be a serious error for on the eighth day the patient suddenly developed septic pneumonia and passed out in 24 hours.

*Case No 4*—Ferdinand M——, age 48, native of Italy, occupation, waiter.

Was first seen July 11, 1917 and gave the following history. For the past five or six months has had a feeling of difficulty and dull pain on swallowing in the region of the left side of the larynx. His voice has been slightly hoarse. He has had excessive secretion from the pharynx and larynx.

Examination showed infiltration of the left arytenoid and inter-arytenoid space, with ulceration on the oesophageal face of the arytenoid. No enlarged glands could be felt externally. A Wassermann reaction proved negative.

On August 8th a low tracheotomy was performed under cocaine anesthesia and a section removed from the growth, which proved to be epithelial carcinoma.

On August 15th, total laryngectomy was performed. After the larynx was removed the upper end of the oesophagus was inspected and about one inch down in the oesophagus a patch of carcinoma was found, about one-half inch in diameter. The anterior wall of the oesophagus was excised about one and one-half inches in length. The rest of the wound was treated in the usual manner and the opening in the oesophagus was left open and packed with gauze. The entire upper end of the wound was left open and packed. In the after treatment the wound was dressed twice daily and the patient was nourished through a catheter introduced through the nose and into the oesophagus. Except for a slight rise of temperature due to a stitch abscess in the lower end of the wound the patient convalesced very nicely. At the end of one week ten milligrams of radium was introduced into the wound for one hour at its upper end, at the site of the original growth. This was repeated for one hour and a half one week later and again for one and one-half hours, one week after that. The patient was on the roof garden of the hospital on the sixth day. About three weeks after the operation, while being fed with a catheter through the nose the catheter slipped from the patient's grasp and was swallowed into the stomach. This did not seem to disturb the patient however and he progressed as if nothing had happened. After several days an X-ray picture disclosed the catheter still in the stomach. Another X-ray picture was taken one week after this and the catheter still seemed to be in the stomach. It was then decided as the neck wound had all healed to give him an anesthetic, pass the

oesophagoscope through the wound in the neck into the stomach and search for the catheter, after which the skin of the neck was to be sutured to the side walls of the oesophagus with the idea of later loosening skin flaps on either side and closing over the anterior portion of the oesophagus with the skin flaps. This was done on September 13th. Unfortunately the writer did not adhere to the principle of rectal anesthesia at this time and ether anesthesia was given through the tracheal opening in the neck. In order to obtain sufficient relaxation of the sphincter muscle at the opening into the stomach, a considerable amount of ether was needed. The stomach was thoroughly explored but the catheter could not be found. The oesophageal mucous membrane and the skin of the neck were then sutured together. Within twenty-four hours the patient's temperature jumped to 104 deg and a well marked pneumonia of the right lung developed, to which he succumbed four days later.

*Case No 5*—Mr H W——, age 38.

Began with hoarseness in October, 1916. Shortly after this he began to have pain in the larynx. Was first seen by writer in April 1917. Examination showed a papillary growth springing from the left vocal cord and the tissues immediately below it. A Wassermann test was taken which proved negative.

On May 9th the growth was removed and a section submitted to the pathologist. He reported that it was suspicious of malignancy. Accordingly the case was watched and when seen in October the growth was again apparent and the infiltration had extended to the arytenoid. A section was again removed from the growth which proved to be carcinoma. On October 25th a preliminary tracheotomy was performed and one week later, November 1st, the left half of the larynx was completely removed, that is the left half of both the thyroid and cricoid cartilages. The patient made an uninterrupted recovery and left the hospital three weeks later.

*Case No 6*—Mr Joseph R——, age 54, occupation, rabbi.

Was first seen March 5 1918. At that time gave a history of progressive hoarseness for four months. Examination of the larynx revealed infiltration of the left vocal cord, false cord, arytenoid and inter-arytenoid space, extending over to the right side. In the center of the infiltration was the typical cauliflower appearance of carcinoma. Two large, hard glands could be palpated under the sternomastoid on the left side at the level of the hyoid bone. A Wassermann which was obtained by his physician proved negative. His teeth were in bad condition from pyorrhea. His nasal accessory sinuses were normal. He was referred to the dentist who treated his mouth for one week and thoroughly sterilized it. On March 19th, under novocaine anes-

thesia, injected behind the middle of the sternomastoid on both sides, in order to catch the superficial cervical plexus, a preliminary low tracheotomy was performed, following which the sternomastoid muscle on the left side was turned back and the glands down along the jugular were dissected out. On March 26th a complete laryngectomy was performed under colonic ether anesthesia. The patient convalesced remarkably well and was out of bed on the third day and was up on the hospital roof garden on the sixth day. He left the hospital cured in three and one-half weeks.

### THE TREATMENT OF NEW GROWTHS OF THE LARYNX BY INTERNAL SURGICAL METHODS ~

By H ARROWSMITH, M D, F A C S,  
BROOKLYN

**N**O more interesting and in many ways profitable task could be undertaken than to trace step by step the development of internal laryngeal surgery from its earliest days to the present. We shall have to confine ourselves to a rather casual account of a few epochs in its evolution, by reason of lack of time.

In 1852, Horace Green of New York, reported what is probably the first removal through the natural passages, of a deep-lying laryngeal growth. Dr Green blindly passed a sponge probang into the larynx and succeeded in separating some small polypoid excrescences, more than thirty in number, which were removed at several sittings. The patient had suffered from aphonia, dyspnea and dysphagia. "The breathing improved but the aphonia remained" (Trans Am Med Asso, 1853).

In 1859, Czermak first actually *saw* by means of his lately perfected laryngoscope a small warty growth on the right vocal cord (Wien Med woch, Jan 8, 1859).

Twelve years later—1871—Morell Mackenzie published his classic monograph "On Growths in the Larynx." This work was based on his personal observation of "nearly 150 cases of laryngeal growths," and embodied a report of 100 consecutive cases treated by him. These 100 cases were all of benign character. He excluded all instances of carcinoma and of what he called "false excrescence," by which he apparently meant syphilitic lesions and their sequelæ.

An enumeration of the varieties of these growths is interesting. There were 67 papillomas, only eight of which occurred earlier than the fifteenth year, and only three of these before the tenth, 10 fibromas, four adenomas, four fibro-cellular growths, one fibro-epithelial growth, five benign epithelial growths, three fasciculated

sarcomas, one epithelioma, two cysts, one vascular growth and one myxoma.

These tumors were treated endolaryngeally by the following procedures: applications of caustic solutions and the galvano-cautery, evulsion or crushing by means of forceps or snares and by incisions. By reason of complications, thyrotomy, laryngotomy or tracheotomy were necessary in a few instances. Seventy-seven of these patients were cured, eighteen improved, in three the results were negative, and two died, both having been tracheotomized.

When it is realized that such results were attained in the first decade of laryngoscopy, Mackenzie's courage in entering a new field and his skill in developing a method of indirect laryngeal attack, which has never been improved upon, are worthy of the admiration and gratitude of all posterity. It must also be remembered that this remarkable record of laryngeal tumors, treated and mostly cured through the natural passages, was made in the days before any adequate local anesthetic was known, which argues greatly for the discipline of the patient as well as for the skill of the operator.

Mackenzie stated that laryngeal tumors had occurred in his private practice in relation to all other throat affections, including those of the pharynx, in the proportion of  $1\frac{1}{2}\%$ —in his hospital work of  $\frac{1}{2}\%$ —explaining the discrepancy by the fact that loss of voice is more important to the educated than to the lower classes.

He also gave a detailed tabulation of all cases published by other practitioners during the period covered by his personal report—189 in number. In this series there were only 14 patients younger than 15 years of age, with eight instances of papilloma. I have particularized as to the frequency of papilloma in childhood, because from general statements I think we have derived the impression that it is much more common than the actual figures indicate.

Subsequent literature abounds in reports of successful intralaryngeal removal of benign tumors and with descriptions of various instruments devised for general use or to meet the exigencies of some particular case.

In 1887, Lennox Browne, Mackenzie's pupil and successor, appears to have backslidden to a certain degree, for he says in his book on Diseases of the Nose and Throat: "The cardinal law that an extra-laryngeal method ought never to be adopted, unless there be danger to life from suffocation or dysphagia, should be applied with equal force to intra-laryngeal operations."

While primary malignant or cancerous growths are of rare occurrence within the larynx itself, benign growths often assume a malignant character by the irritation produced by attempts at removal. As is well known, this assumption has been refuted by experience. He strongly deprecated "instrumental interference with these

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 23, 1918.

benign formations for mere symptoms of discomfort," and emphasized, very properly, the greater necessity of intra-laryngeal non-interference with frankly malignant neoplasms

Ten years later—1897—Bernard Fraenkel (*Arch fur Laryngol* etc, Vol VI) announced his cure of five cases out of nine of laryngeal cancer, by intra-laryngeal surgery. One patient had been free from recurrence for 13 years, one for 10, one for nine, one for six, and one for one and one quarter years. He gathered from literature 22 cases, including his own, in which 12 cures had been achieved in this way, but, in concluding, he warns his readers that "He who uses the intra-laryngeal method incurs a serious responsibility, a vital prerequisite is the possibility of completely removing all diseased tissue with a good margin of healthy structure."

but it is impossible to so accurately define the boundaries of a cancer that all diseased tissue can be removed with entire certainty."

I have been surprised on several occasions on opening a larynx to find how greatly the actual dimensions of a new growth exceeded my anticipations after the most painstaking examination by indirect as well as direct laryngoscopy.

Since Fraenkel's paper there have been other occasional reports of the successful removal of laryngeal cancers by internal surgery. At the New York Academy of Medicine, in October, 1917, Harmon Smith recounted the history of a laryngeal carcinoma which he removed by the indirect method with no recurrence after 18 months. He says, very frankly "Of course, had I known that this tumor was malignant, I would not have removed it except by more radical measures."

I think it may be stated as an aphorism that the cure of laryngeal malignancy by internal surgery is decidedly more a matter of good luck than good or prudent management.

The discovery of the possibilities of direct laryngoscopy and in 1911 of the practicability of suspension laryngoscopy have greatly simplified surgical attack on the interior of the larynx and have opened up a vista of which a few years ago we did not dream. With the suspension laryngoscope as devised by Killian and improved by Lynch and others, we can command a field almost as accessible as the external surface of the body, and having exposed the larynx we can do quietly and accurately whatever we have planned under good illumination in an immobile territory and with free use of both hands.

Besides having greatly improved the suspension apparatus, Lynch has devised a complete instrumentarium for endoscopic use, by means of which laryngeal growths may be dissected out, bleeding points picked up and tied and the operation wound coarctated and sutured, if necessary. He has reported the removal in this way of several laryngeal epitheliomas.

In the main, however, most direct and suspension laryngoscopists still evulse, excise or cauterize as of yore, except that these procedures are carried out with straight instruments under direct control of the eye instead of around the corner.

Fulguration in some cases has served an admirable purpose. It is often preferable to the galvanocautery in that the reaction is comparatively slight and that there is relatively very little subsequent scarring and consequent distortion. It has been employed with happy effect in the treatment of laryngeal papilloma—that bugbear of laryngologists.

Last year Wylie reported "fifty cases of innocent laryngeal growth" (*Journ of Laryng*, etc, February and March 1917). There were 18 simple papillomas (only one child five years old had papilloma), four fibro papillomas, 14 fibromata, six seroedematous and eight unclassified growths. A few of these tumors were removed by direct laryngoscopy, but most by indirect with Mackenzie's, Grant's, Whistler's, or similar, forceps, several were destroyed by the cautery and a few recovered without treatment. There were no recurrences. The author concludes that direct laryngoscopy should be employed only when indirect fails.

At this date this certainly sounds like an anachronism but I am not sure that Wylie is not right in a measure. This is an admission from so ardent a direct laryngoscopist as I am. In the present enthusiasm for direct laryngoscopy, indirect examination and treatment of the larynx seems likely to become a forgotten art. This would be an irreparable loss, because as a diagnostic measure indirect laryngoscopy under certain circumstances will show conditions that direct will never reveal, and in some cases indirect methods of treatment will be accepted by patients who cannot tolerate direct examination and manipulations. Again, indirect methods require simple, inexpensive and easily transportable apparatus—direct, a rather bulky and costly outfit. The two methods complement but cannot replace each other.

It is an open question whether in 1918 we can show very much better results in the treatment of laryngeal tumors than Mackenzie achieved in the sixties or than Wylie enumerated in his last year's paper, following very closely Mackenzie's methods.

In conclusion internal surgery according to one plan or the other is entirely adequate to deal with all but the most exceptional instances of benign laryngeal tumors but he is a temerarious operator who intra-laryngeally starts anything with a malignant neoplasm. He may in rare instances not have cause for regret—that assuredly will be his good fortune—nothing more.

*Discussion*

DR T H FARRELL, Utica I am very sorry that the train service prevented me from hearing the first paper in this Symposium. After listening to the other two papers, it really seems presumptuous for me to take up your time with any discussion.

However, I would like to point out some of the limitations under which we men up in the country are working that you metropolitan men know nothing about. When you talk about the number of cases you have seen and operated on, it almost takes away my breath. We don't have the opportunity of seeing any such number of cases and we are not so situated as to see one another's cases, as a rule, so that we do not have the benefit of that interchange.

In my own experience I cannot remember just now any adult case in which direct laryngoscopy assisted the diagnosis over the indirect, with the exception perhaps of one case of hemilaryngectomy, in which there was a question of recurrence, and in that case the direct laryngoscopy gave a much better view, a much better idea of the condition than the indirect.

I was going to say that in the matter of diagnosis we have a fair opportunity of developing our ability to make the examination by direct laryngoscopy and confirm our diagnosis in that way, but when it comes to operation, we haven't the number of cases to develop the facility which we know you men must achieve with the number of cases you have coming into your hands, nor do we have the opportunity of training nurses and assistants in the same way you have, nor to get them. Of course, the suspension laryngoscopy has been of tremendous help to us in that respect, by making us less dependent on skilled assistants, but even so, I would hesitate very much to undertake to operate by the direct method unless it was a fairly simple case, that is, the growth attached to or above the glottis, or in an older child or adult. With the young child with dyspneic symptoms, I think personally I would hesitate very much to go ahead with the operation by the direct method. In that connection, at our last meeting a neighboring practitioner read a paper and at that time was criticized very much for having operated by the external method rather than having operated by the direct method. Now I can quite appreciate the reasons why he should use thyrotomy, with the help and assistance I am sure he had to put up with rather than venture to use the indirect.

So we up-State here follow after, as it were, and are not able, I think, to do the forward work that you can accomplish in such a city as New York.

I wish Dr McCoy had said a little about the dangers and difficulties in connection with the complete extirpation of the larynx, and a little more about the after-care. Perhaps he will supplement it now.

DR GEORGE F COTT, Buffalo Regarding the age of the patient, laryngeal carcinoma occurs more often after 40 than it does before. Every now and then we find patients that are much younger. I have in mind one patient now in the hospital that I did a tracheotomy on a few weeks ago—31 years old—and I expect within a few weeks to remove the entire larynx. Another patient was 28 years old, in which the operation wasn't done until five years afterwards and had no treatment during all that time. Both were due to papillomatous degeneration. Another patient was 27 years old. Those are the youngest patients I have seen with carcinoma of the larynx.

Regarding pain I have extirpated about a dozen cancerous larynxes and I haven't heard a single patient complain during all the time that they have had their carcinoma, with the possible exception of the latter part of the disease before operation when swallowing produced difficulty, otherwise no pain.

Now the question arises whether it is best apparently in an operative case to let the patient go on and die within a year or two, or attempt to remove the larynx.

I have gotten into the bad habit, perhaps, of recommending an operation, and I tell the patient that in all probability he will die. I tell him if he doesn't die of the operation on the table, without operation he will certainly suffocate and die a horrible death afterwards, and then I ask him which he prefers. If they have a chance to recover, I don't tell them that, but I tell them to go home and make their wills anyway, because there is always danger in any kind of an operation. I think it pays to be frank.

When you have a carcinoma of the larynx in the fat, thick, short neck, and probably an enlarged isthmus, you have something on your hands. I had one last week. I never saw anything like it, and I never want to see anything like it again. This patient, who was an ignorant Spaniard, was sent to the hospital on account of difficult breathing. He was afterward turned over to me from the surgical side to do a tracheotomy without knowing what was the matter. We found out afterwards that it was cancer. I never expect to see the like again.

Now, when you hear reported cases—and you do from time to time in elaborate papers, excepting today—you find that the results are very favorable. I know Crile reported 27 total laryngectomies, with two deaths, and consequently 25 complete recoveries, for a number of years. I haven't had that result. I have had one total laryngectomy living two years, I have one living now that I did about ten months ago, a man 53 years old, and he is working every day. The hemilaryngectomies are all alive. Perhaps the reason of such good results is that these men select their cases and won't operate on anything that has any kind of a chance not to recover.

I think, as I stated before, it is far better to let the patient die on the table, or within a few days afterwards, than to have them go on for a year or two and die of that horrible condition due to closing up of the oesophagus and the larynx.

DR D BRISON DELAVAN, New York City. It is now more than forty years since the operation of laryngectomy was first demonstrated. In that time innumerable cases have been operated upon. Today we are absolutely ignorant as to the results upon the duration of life that this operation has given. We hear of the successful cases, but not of the unsuccessful ones. Men like Sir Henry Butlin and a few others have reported all of their cases without reserve, but they are the rare exceptions. Gluck, who for many years refused to publish his results, operated upon practically everything, no matter how extensive the dissection required, and claimed an unprecedented number of cures. In a number of his cases which I have seen the resulting mutilation was worse than death, while in several of his patients under my observation recurrence supervened almost before healing had become complete. I believe therefore, that no reliance whatever can be placed upon his statements.

Any man who is doing good work and has good success will be only too glad to report his statistics but the very moment he fails to do it we can feel assured that he has something to fear in publishing them.

It is most unfortunate that we do not know more about the results of these operations.

In view of what was said by the last speaker, the duration of life in ordinary cases, after the beginning of a carcinoma of the larynx which is demonstrable is perhaps one two or three years. Are we going to shorten life or lengthen it by means of operation?

I cannot but believe that in spite of the successful cases reported during the last forty years the actual duration of life has been shortened rather than lengthened by operative interference. The only thing to be done in order to bring about an exact knowledge of the question is to report accurately just what happens, whether the results are good or not.

Dr J. Solis-Cohen was the first to operate by the method of attaching the severed end of the trachea to the walls of the neck. His first case operated after that method lived for over ten years then went home to Ireland and disappeared.

In a case of mine operated upon by Dr Farquhar Curtis of New York for hemilaryngectomy the man has lived for twenty years. Such cases are very unusual. We want reports of all of them, bad result as well as the good ones. There are many things to be said, but I would like to leave this one idea, namely, the absolute

necessity for the painstaking and truthful recording of all cases and the final reporting of the results.

DR WENDELL C PHILLIPS, New York City. I would suggest that we should bear in mind definitely that in incipient intrinsic cancer of the larynx, where the growth is confined to one vocal cord or one side and a hemilaryngectomy may be performed, there should be no question as to the attitude of the profession in regard to it. These cases should be submitted to operation and a favorable outcome may be expected. But in cancer involving the entire larynx or in cases of extrinsic cancer, then the question assumes a different character.

It is my opinion that in the latter type of cases the average duration of life in the operative cases has been shortened rather than lengthened as a result of operative interference. I believe Dr Delavan is entirely right, because so many of these cases die within seven or eight days like the case of Dr McCoy. Of course there was an error in the care of that case he reported but with the kind of care Dr McCoy would have been able to give the case himself, which has been given to very many operative cases since time immemorial, a certain percentage of those cases die anyway from septic pneumonia.

It is a large subject, and in the matter of diagnosis it has been my good fortune to see two cases at such an incipient stage that only a portion of one vocal cord was involved, so that not more than one-third of the vocal cord was involved in the cancerous process, the rest of the vocal cord being absolutely white and normal. In both of these cases my diagnosis was papilloma, but following my custom in the removal of the papilloma I had them examined under the microscope and they proved to be epithelioma. They were both operated upon. One of them lived about fifteen years and the other one after a period now of about four years is in apparently perfect health. I think the results of operation in incipient cases, especially where the seat of the growth is the vocal cord and a hemilaryngectomy is performed, are good.

DR W. LEFELIE CULBERT, New York City. As a confirmation of what Dr Phillips and Dr Delavan have said, I would like to mention here a case that I had a few years ago of epithelioma—it proved so by examination of the right vocal cord. The patient was a strong sturdy man of about forty-three—a policeman—and was very eager to be cured. His condition and the fact that his only chance for recovery was immediate and complete removal of the growth were fully explained to him. The patient was inclined to accept an operation but through the influence of his wife he decided to try Christian Science in place of surgical removal. At the

time of his decision, one side of the larynx only was involved, so that the case was an operative one. The growth, however, was very rapid, and after the tumor had extended beyond the confines of the larynx into the esophageal wall the man came to me and asked for an operation, but I advised him strongly to go on with his Christian Science treatment.

In less than one month after this he was experiencing great difficulty in breathing, he could not sleep at night, he would become cyanotic, and I had to do an emergency tracheotomy. He then was comfortable for a little while, but within six months had an enormous abscess—as large as a fist—over the cricoid and thyroid cartilages on the right side, this was opened and a great quantity of pus came away, purulent discharge continued for a few weeks until his death.

The whole duration of the case from the time the tumor was operable with fair success of complete removal to the time of the man's death was less than nine months.

I think that in every case of malignant growth of the larynx we ought to explain to the patient the chances of his recovery—what it means to him—not to urge an operation, but explain the condition fairly to him and let him choose for himself. Personally, I should not want to have a laryngectomy done on myself, but I think that each individual has the right to decide for himself what he wants.

DR WENDELL C PHILLIPS, New York City. The question of advice to a patient is a very serious matter in these serious cases. I recall an instance about a year ago, where a man from one of the up-State towns consulted me for an advanced case of laryngeal cancer. He was a very intelligent man, non-excitable, and I felt it my duty to give him a plain statement of the historical facts in connection with his case, and I did so. He asked me what I would do if I were to have my own case explained as I had explained his to him, and if I stood in his shoes. I told him I would let it alone and I would not have it operated on at that stage. We are very often confronted with these very experiences.

DR ARTHUR G ROOT, Albany. I think, as has been emphasized by some of the speakers, the particularly sad feature of cancer of the larynx is that so far as the prolongation of life is concerned, operative surgery has given us in the past number of years but little to encourage us. I feel, however (and I gather this impression from my own experience with a number of cases) that we seldom, if ever, see a case of laryngeal cancer in what might perhaps be said to be the incipient stage. I have been astonished at the condition that I have found in some cases, astonished at the fact that the patient has

not realized more discomfort until he sought advice or examination.

One of the speakers said that it had been his experience that these patients do not complain of pain. I think it is true that many of these cases of laryngeal cancer do not complain of severe pain for at least a long time. I recall a case of a perfectly healthy looking, robust man in excellent circumstances, who came to this city to consult me, and all that he had noticed was, as he put it, "a little huskiness of his voice that didn't seem to clear up." I examined him very carefully on a number of occasions and finally said to him that he had a condition of the larynx which to my mind was very important, and so serious did I think it and of such great importance did I consider it, that I felt that he was entitled to the observation and opinion of somebody else, and if I were in his position I would feel that I would like the opinion of more than one laryngologist. That gentleman sought the opinion of a well known man in New York City. He telegraphed for me to meet him one day and go to New York City with him. I met him at his train and I said, "Why do you desire me to go to New York?" He said, "I telegraphed for you so that you could be present at the consultation in New York." Therefore, I asked no more questions. I was present at the consultation in New York, and the specialist then took me to one side and drew out the picture of the larynx as he saw it. I had said nothing to him about the case. I said, "Doctor, we don't see that larynx exactly alike. I think the growth is much more extensive than you evidently consider it, but I have examined the patient three times and you have only examined him once, which probably accounts for the fact that we don't see it just in the same way."

That patient was submitted to a radical operation for the removal of his larynx by one of the most distinguished surgeons in the United States, and he died very promptly.

I agree absolutely with Dr Phillips' observation concerning Dr McCoy's case. Dr McCoy is a little bit too conscientious about that case, in my judgment. I am inclined to feel that that patient would have died very promptly under any condition. However, there is this one impression I have concerning an early case of laryngeal cancer, or at least a case that you have seen, that you think is in an early condition. I believe in recommending the performance of a tracheotomy very early for this reason. I feel that you put your patient's larynx at rest, and I believe that very condition of putting the patient's larynx at rest does the patient a great deal of good, it relieves the patient's mind of an impending attack of suffocation, and the fact of putting the larynx at rest seems in many instances to cause a cessation, if I may use that term, of activity on the part of the infected larynx.

So far as the question of what we would do if we were the patient concerned, that is a hard question to decide. I do think that there is this indicated, that we should give our patient all the comfort that we possibly can, if he is suffering pain, by the administration of narcotics, but by all means do a very early tracheotomy for the purpose of putting that larynx at rest.

DR D. BRYSON DELAVAN, New York City. Among the excellent ideas advanced this afternoon it is hard to choose which to discuss. Skilled attention in the after-care of these cases is of paramount importance. Dr J. Solis Cohen gave the immediate after care of his operated patients into the hands of no one. He insisted upon attending them himself.

To prove the importance of this personal supervision, a lady developed a minute papilloma upon the extreme margin of the vocal band which was watched by Dr Charles H. Knight for a year and a half, I being in consultation. The papilloma grew very slowly. At the end of the above mentioned period a fragment examined proved to be epitheliomatous. The case, at a first class hospital, was placed in charge of one of the best of living surgeons who did a hemilaryngectomy. The patient was left in the hands of a nurse who had never even seen a tracheotomy before. Within half an hour after the operation she coughed out the tube. The nurse didn't know how to replace it, and before help could be obtained the patient died.

Another case, at another leading hospital was left in the hands of an ignorant hospital interne who had never seen a thyrotomy. The patient coughed out the tube and died before any one who knew how to replace it could be summoned.

If you have not thoroughly experienced attendants, take care of the case yourself, or else postpone the operation until you can make such arrangements that it will be in absolutely safe hands.

Speaking of the tracheotomy tube, a convenient and valuable instrument is the one known as the Durham cannula. It has a movable neck plate so arranged that the tube can be extended backwards and forwards and fixed by means of a set-screw at almost any length so as to enable it to be accommodated to the thickness of the tissues of the throat. It may be a source of great comfort to the patient.

The most interesting case that has ever occurred in this country was that of a woman whose husband died of laryngeal cancer. She developed a laryngeal, apparently non-malignant growth which was operated on endolaryngeally by Dr. Elsberg and kept in abeyance for many years. I treated her for a number of years after Dr. Elsberg's death. Thirty years after the inception of the growth she died of a malignant development of it.

As the reader of the second paper has pointed out, diagnosis through skilled laryngoscopy, through a deep knowledge and keen appreciation of the visual appearances of the growth, still remains a most valuable aid. It seems that almost nothing else can take its place, and the more we study these cases, the more of them we see, and the more pains we take in trying to differentiate them one from another, the more we will increase our own skill and knowledge and the safer the patients will be. The question whether a patient should be operated upon or not in advanced carcinoma of the larynx becomes finally one of ethics rather than of surgery, and in certain cases should rather be left to the theologian than to the scientist.

In early cases experience has certainly proved that if the operation can be done by skillful, experienced surgeons with proper after-care, and in patients whose general condition warrants the patient should be given the benefit of it.

DR HUBERT ARROWSMITH, Brooklyn. I have little to say in addition to what Dr. Delavan has just said. I think that laryngologists have got to put the question to themselves as to whether they are going to do this kind of an operation for a record, or for their patient's welfare, either his ultimate welfare or his immediate relief, and I certainly have seen a great many cases of the kind that Dr. Cott has spoken of where it has seemed to me that we were justified in going to almost any length with the possibility of preventing the ultimate future that I have seen very often exemplified.

I remember particularly one patient whom I saw in 1910 absolutely inoperable from the point of view of any aspiring surgeon, who wanted to add to his credit. The man had a larynx then that was extrinsically involved, so that externally it was as big as my fist. He was dyspnoic. I did a tracheotomy and let him go. He lived for eighteen months and got along fairly comfortably for a year but the tortures that that man endured during the last six months of his life made me regret most emphatically that I didn't put him on the table and take that larynx out, at whatever risk of his immediate death. Dr. Delavan has studied statistics in this connection more than anybody else in the world, and I think what he says is absolutely so, that Jim Smith and John Brown have done a laryngectomy and gotten away with it for a while and it goes into the record as a success but the Lord knows what becomes of the patient. That, however, isn't science. What we want in this sort of work is the reports of fairly competent men and their end results. A year doesn't mean anything, two years don't mean anything, five years don't mean anything. Of course most of

us are not going to live to know about the end results

But I think in the main Dr Phillips, and perhaps Dr Delavan, are a little bit too conservative for the good of their patients, though absolutely not too conservative for the good of the record. In a recent paper by Dr Crile he summed up the situation pretty well when he said that even in a very extensive extrinsic involvement one is justified in giving the patient a fighting chance. It may terminate his life sooner, but it will terminate it more comfortably.

In the March number of the "Laryngoscope" I think Joseph Beck, of Chicago, sums it up very nicely, when he says "One case that recovers by such an heroic measure we may consider as 100 per cent of cure, because without an intervention of that kind the patient certainly is bound to die."

Dr JOHN J. MCCOY, New York City. A number of thoughts have occurred to me while the discussion was going on. In the first place, I was of the same opinion before I started to operate these cases as men who do not operate them. I had thought it was a delicate, difficult, dangerous, non-productive operation, what is the use? The patient will only die, and it will only effect torture. When I looked up the records of these operations I thought to myself at the time, this operation should not be any more difficult, if as difficult, as a mastoid operation with excision of the jugular vein. I couldn't see any reason why it should be. There is no vital structure involved in the operation, and I thought if I could operate and eliminate certain dangers, that it ought to be a good operation. In looking up the records of those cases operated, it occurred to me that most of them died of sepsis or pneumonia and it occurred to me that if I could eliminate those possibilities that it would be a very justifiable operation. In looking for the causes of sepsis I noticed that none, or very few of the writers on the subject paid any attention to the mouth or teeth or nose before operation. It occurred to me that here was a wound in the lower pharynx onto which was constantly dribbling more or less septic matter from the mouth, the wound in the lower pharynx would become infected and it would get through to the neck wound, and there we got our septic pneumonia, etc., and I thought if I could clean that mouth and nose and get it just as sterile as the outside neck was I had gone a long ways. Then the next point was, patients dying from pneumonia. It seemed to me that if I could get an anesthesia that would not irritate the lung that I could get away from another danger in that way, and in a case that I tried the results were so pleasing that I thought it was worth while.

Here was a man who had a very serious condition, and he was greatly relieved. He may get a recurrence in another part of his body, but he shows no signs of it now. That man left

the hospital in three weeks without a rise of temperature and without a symptom incident to his operation. That was a very encouraging case and encouraged me to proceed further.

We might just as well let a cancer of the breast alone, because the glands tend to be involved and they tend to have recurrence. We know, as a matter of fact, that a larynx gives less chance for an involvement of the glands than any other part of the body. So that here is another reason why we should operate these cases. If we have a cancer that is self-limited for a long time and we can completely remove it, we have a better chance of curing that patient than we have of removing a breast and the glands that go with it.

So that since operating on these cases I am strongly of the opinion that they should be operated, and if we follow certain lines the operation will be fraught with very little difficulty or danger.

Another point is this. I think the laryngologist should operate these cases, because he is the man who determines where this growth is and what the type of operation should be to remove it. In other words, if a man has a cancerous growth located on the middle or anterior third, involving the cord, that patient might have an intralaryngeal removal. If the patient has an extrinsic cancer, involving both sides, he should have a total laryngectomy. If the laryngologist says, "I will do it for you," he saves that patient losing most of his time drifting from general surgeon to general surgeon.

Dr Farrell asked about the dangers of the operation. Well, there are practically no dangers to the operation, aside from ordinary surgical dangers. Here is an incision in the middle line, a dissection of tissue which involves no vital center or vessel, we strike practically only the superior laryngeal artery. In a case such as Dr Cott mentioned, a short, fat neck, I would be tempted to tie off the superior thyroid artery that supplies most of the blood, and in that way I would have practically a dry field.

The danger, of course, of blood getting into the trachea during the operation can be mostly obviated by having the patient in the Trendelenburg position. So that the operation itself is not as difficult an operation as a mastoid operation.

In the after-treatment, of course, various things will come up. Aside from what Dr Delavan has said about the possibility of your trachea cannula being coughed out, you have got to have somebody there who will look after it, and yet I have never had that happen. If it is a long enough tube, I see no reason why it should come out. Of course, if you have your tape tied to your cannula safely, the nurse can remove the inner tube and put it back again. The question has never arisen in my cases.

## CONSERVATIVE SURGERY OF CHRONIC INTESTINAL STASIS\*

By FRANK C YEOMANS, MD, FACS,  
NEW YORK CITY

SIR ARBUTHNOT LANE, who coined the term, defined intestinal stasis in these words "By chronic intestinal stasis, I mean that the passage of the contents of the intestinal canal is delayed sufficiently long to result in the production, in the small intestine especially, of an excess of toxic material, and in the absorption into the circulation of a greater quantity of poisonous products than the organs which convert and excrete them are able to deal with." The term stasis, therefore, comprises both abnormal delay and intestinal toxemia.

Abnormal delay may give rise to no symptoms and occurs frequently in the colon from mechanical causes. Several well-known factors enter into the apparent immunity to toxemia in one group of cases and susceptibility in another. Large quantities of the products of protein putrefaction may be present in the stools, while the urine contains relatively few, or the stools may appear comparatively normal in the presence of toxemia, while the urine shows large amounts of aromatic bodies. Hence, it is the toxins in the circulation only that act deleteriously on the body cells. Their quantity depends upon intestinal putrefaction of proteins, the integrity of the intestinal mucosa, the neutralizing effect of the liver on the circulating toxins, the integrity and efficiency of the endocrine glands (the thyroid, the adrenals and the pituitary body) and the power of elimination by the excretories, especially the kidneys. Thus bacteriology and biochemistry are the essential factors in intestinal toxemia.

As the toxins in the circulation bathe all the tissues of the body, the pathology of intestinal toxemia is represented by chronic degenerative changes and irritation of any organ or group of organs, as the nervous system, the cardiovascular system, the synovial membranes, the skin, etc. Clinically we may distinguish as many types of intestinal toxemia as there are groups of predominating symptoms. Etiologically the symptoms of stasis belong to two groups: (1) those produced mechanically and expressed by pain and perverted function and (2) those resulting from the absorption of toxic material. In a general way, as in analogous conditions in ileus, the higher the point of mechanical obstruction the more severe the toxemia.

Recognition of the presence of chronic intestinal stasis is comparatively simple. The diagnosis of the basic factor or factors operative in a given case however often presents the greatest difficulties. Unless these are determined accurately all stasis cases are apt to be grouped as

sufferers from chronic constipation, with drastic catharsis as the only therapy.

The diagnosis is made from the history, a thorough physical examination, including sigmoidoscopy, an X-ray examination to determine points of delay, an examination of the stools after a Schmidt or a Strassburger test diet of three days, an examination of a 24-hour specimen of urine to include the nitrogen and sulphate partitions, and a Wassermann test of the blood. The special points in the history are the onset of the trouble, is change of occupation, an acute gastroenteritis or ptomain poisoning, typhoid fever, luetic infection, an injury or an abdominal operation. In the X-ray examination the fluoroscopic study of the gastrointestinal tract is of far more value than the serial plates to show points of fixation and to interpret areas of tenderness discovered by abdominal palpation. The Roentgenologic examination should be completed by a picture of the colon after a barium clysis, followed by a second plate, after defecation, to determine the functioning power of the lower colon. A positive Wassermann, or changes in the patellar or pupillary reflexes, may furnish the clue to an early pyretic or tiletic, having stasis as a symptom. No one who is unwilling to give the required study to these cases to reach a correct diagnosis should attempt their treatment either medically or surgically.

As a result of our study, practically all cases of chronic stasis may be separated into two groups: (1) those with and (2) those without obstruction. The treatment of the non-obstructive cases is purely medical. Hygiene, diet, medical and mechanical treatment, proper supports and exercise, autogenous and other vaccines and endocrine glandular therapy have done much to overcome the delay and combat the toxemia in this group of cases.

Many internists hold (erroneously, I believe) the ultra-conservative view that all cases are suitable for non-surgical treatment. Surgeons, on the other hand have practiced either conservative or radical operations with the recent tendency toward conservatism. With these divergent views in mind this question is pertinent: Is there a surgery for chronic intestinal stasis and if so what is its indication? The answer is affirmative and, to my mind, the sole clear indication is intestinal obstruction, either mechanical or physiological. This does not refer to organic occlusion of the bowel as by stricture but includes all lesions that interfere with normal physiology.

Let us review briefly the lesions amenable to conservative surgery and comment on the more radical measures.

Anal fissure or irritable rectal ulcer, products of a hypertrophied spasmodic sphincter muscle which becomes obstructive. No other chronic lesion of comparable size in the large bowel is

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 1918.

responsible for so many intestinal toxemic and "nervous" patients, especially women. Excision of the fissure and superficial division of the sphincter muscle under local anesthesia assures a cure and is the acme of conservative surgery.

Houston's valves are constant anatomic folds of the rectal mucosa. Only when changed into unyielding fibrous bands do they become obstructive. This is determined by dragging down on the free margin of the valves with a hook, bent at a right angle, and passed through an endoscope. An obstructive valve is divided in from seven to ten days by a spring clip, applied in the office, by way of the proctoscope.

The sigmoid colon is a point of segmental delay frequently neglected. The examining tube can be passed into the sigmoid in about 75 per cent of cases. In these the sigmoid, prolapsing into the tube and having a spacious lumen, suggests that the bowel is atonic and probably exceeds the average length of 18 inches, in many instances being 24 to 30 inches, as I have found by actual measurement on a large number of cadavers. The tube, introduced to the full anatomic limit of 12 to 14 inches, i. e., to the apex of the sigmoid, is swayed from side to side to determine the mobility of the bowel. Traction on adhesions causes pain, limits the excursions of the tube and so suggests that bands or adhesions are present that interfere with peristalsis and elevation of the sigmoid from the pelvis at the time of defecation. A correct interpretation of sigmoidoscopic findings, confirmed by radiograms after a barium clysm, is invaluable in determining the cause of many cases of stasis. For the prolapsing, redundant sigmoid which often twists on itself, producing temporary volvulus and symptoms of acute intestinal obstruction, many surgical operations have been employed, as sigmoidopexy, mesopexy, lateral anastomosis of the two limbs of the sigmoid and finally resection. During the past five years I have used instillations of warm olive oil or liquid petrolatum, retained over night, in a large series of these cases. The results have been so satisfactory in restoring normal physiology that surgery, in uncomplicated cases, is rarely indicated.

On the other hand, cases of true Hirschsprung's diseases require resection of the involved bowel for its cure. When bands or adhesions fix the sigmoid in an abnormal position they must be divided, and when volvulus recurs, despite the oil treatment, the sigmoid must be retained in its proper position, preferably by sigmoidopexy or mesopexy.

Example. Mrs. K., aged 27, had severe headache, intestinal colic and constipation of many years standing, relieved only by drastic cathartics. Physical examination showed tenderness over right lower quadrant of the abdomen and an exquisitely tender mass, the size of an English walnut, in the right vaginal fornix. Laparotomy,

September, 1915, revealed a long sigmoid, adherent to the fundus uteri and right adnexa. The adhesions were divided and the appendix removed, with prompt and permanent relief of all symptoms.

*Spastic Enterostasis*—The spasm in spastic constipation is usually limited to a segment of the colon, generally the distal half, and clinically may present the picture of stasis. The cause of this disturbance of physiology is generally an irritative soccharo-butyric intestinal putrefaction or reflex from a diseased appendix, prolapsed kidney or other extra-intestinal pathology. Treatment of the putrefactive group is medical, while conservative surgery is indicated for the reflex cases. The spasm may, however, be mistaken for stricture. An instructive example of this was the case of Dr. T., seen in June, 1916. He was toxic, had one to four watery actions daily, followed by broken, narrow-formed stools and was greatly alarmed as an X-ray showed an apparent stricture of the descending colon. The sigmoidoscope was passed with difficulty through a spasmodic recto-sigmoidal angle. The mucosa was reddened, but otherwise negative. A second radiograph showed the descending colon to be of normal calibre, proving that the apparent stricture was segmental spasm.

General enteroptosis or Glenard's disease, in which all the viscera are prolapsed, is readily recognized and toxemia may be present or not. Distortion of the viscera, *per se*, as shown by the X-ray configuration, is not of vital import, provided the organs have adjusted themselves to their new relations and are working in harmony. Abdominal supports and forced feeding, especially if the body weight can thus be increased, will benefit many of these enteroptotics. Surgery, however, is required for others, in particular for individual segments of the gastrointestinal tract. For example, the marked benefit of suture to the abdominal wall, by the method of Rovsing, of the prolapsed or so-called water-trap stomach. The transverse colon, prolapsed into the pelvis, and especially if adherent there, is restored to normal position, and often to normal function, by the hammock operation of Coffey, by which the gastrocolic omentum is shortened and the colon attached in normal position to the anterior abdominal wall by a row of linen sutures.

A striking instance of the benefit sometimes obtained from this operation is the case of Mrs. S., a frail woman, aged 37, operated May 25, 1916. Her appendix had been removed three years before with no relief from attacks, similar to the present, which had occurred at intervals for eleven years. The last attack, of nine weeks' duration, was marked by anorexia, nausea and vomiting, severe constipation and prostration that confined her to bed. Her convalescence from the

operation was uneventful. She eats ordinary food and has no indigestion. Her weight at operation was 83 pounds, now it is 97, the highest it has ever been, and she does the usual work of her home.

Peritoneal bands and omental adhesions, constricting various segments of bowel, are met in most unexpected places. Example: T. C., a youth aged 19, had pain in lower abdomen, attacks of nausea and vomiting and toxic symptoms for several months. In September 1909, I operated upon a very small right inguinal hernia in the sack of which the omentum was found adherent. Division of the omentum and repair of the hernia resulted in a cure.

Stasis in cecum, the ceco colon and the terminal ileum is responsible for the severest forms of toxemia, and it is the most difficult to overcome. Here the intestinal contents are still fluid, gravity and antiperistalsis oppose orderly peristalsis, and the viable bacterial flora is richest—factors all favorable to toxemia. Peristalsis is further hampered in some instances by deformities and regulations of the cecum and ascending colon and by constrictions due to peritoneal bands and membranes. The operative results in this group of cases are not uniformly successful and should be applied only as a last resort. Sometimes, when bands and membranes are divided and adhesions separated, the distorted bowel straightens out and gas passes freely, with resultant relief of symptoms. Plication of the cecum to diminish its calibre, as advocated by Wilms and Blake and shortening the cecum and ascending colon by longitudinal sutures in series through the muscular bands, at times yields satisfactory results.

The most severe cases of stasis I have ever seen was of the ceco colonic type. Mr. S., aged 39, had obstinate constipation, headaches and intestinal colic for nineteen years when seen in 1912. One year before he became totally blind. A Wassermann of the blood was negative. Urine negative, except in excess of indican. At operation, April 9, 1912 cecum was found bound down by a peritoneal veil. This was divided and a long, retrocecal diseased appendix removed. Ileum, bound to cecum, was freed. The sigmoid, about 18 inches long and adherent, was mobilized and sigmoidectomy done. Now, six years after the operation, his bowels act regularly with mineral oil and his vision has been so far restored that he attends his store and delivers goods in various parts of Brooklyn without assistance.

**Ileac Stasis.**—The delay at the terminal ileum may be mechanical from an adherent appendix or from bands or adhesions producing a so called Lane's kink. Removal of the offending appendix, division of bands and separation of adhesions yield good results. All raw areas must be covered in with great care, however lest adhesions recur and bands reform.

What of the role of the ileocecal valve itself in stasis? This valve is not only mechanical, to prevent reflux from the cecum, but a true sphincter under special nervous control, differing from that of the adjacent intestine. Here is one of the nodal points of normal delay, as demonstrated by Keith. This nervous mechanism, in a way analogous to that of the pylorus, regulates the rate of flow of the ileal contents into the cecum by inhibiting peristalsis of the cecal ileum and controlling the valve. It follows that while the X-ray may show delay at the terminal ileum, as yet it cannot always differentiate between mechanical and physiological causes.

On the other hand, Kellogg and Case claim that insufficiency or patency of the ileocecal valve is responsible for ileic stasis and ascending infection from the colon. While patency of the valve may be constant in the exceptional case, the truth is probably found in the fact that, in the great majority, a valve demonstrated at one time by the X-ray to be patent at another appears normal, the patency being physiologic. Endocrine glandular therapy is indicated for the majority—the physiologic group. The repair or reconstruction of the valve is a relatively simple and safe procedure but the reports of the end-results are too recent and few to warrant conclusions of its merit.

**Radical Surgery.**—The major operative measures for chronic enterostasis are comprised under two heads: (1) short-circuiting operations and (2) colectomy, either partial or total.

**Short-circuiting.**—In 1913 I reported the first case of cecocolicostomy deliberately performed for chronic stasis. The patient, aged 48 years, had suffered from constipation and toxemia since the birth of her last child 21 years before. Strong purgatives at night and an enema in the morning were required to move the bowels. The X-ray showed a constriction of the descending colon and a giant sigmoid flexure. The huge sigmoid was readily anastomosed to the cecum and the patient has remained perfectly well since. The hopes raised by the favorable outcome of this case, that this operation would be ideal in all cases of stasis in the proximal colon and sigmoid provided the cecum could be united to the sigmoid without tension, have not proved universally true.

Fluoroscopic examination after gastroenterostomy shows that, in the absence of pyloric obstruction most of the bismuth follows the pyloric route. Analogous conditions prevail after all short-circuiting operations. The lateral stomach functions only partially unless the lumen of the short-circuited segment of bowel is completely closed. The probable rationale of the relief following cecocolicostomy is that the passage of part of the contents of the resected cecocolon through the new stomach relieves the

distension and colitis sufficiently to allow orderly, efficient peristalsis to be reestablished.

Reports from the literature and personal communications, together with my own cases, all done more than three years ago, indicate that cecocolostomy has been quite extensively used and has been successful in about two-thirds of the cases in which it was employed. This is probably a fair estimate of the value of the operation. Some cases were unimproved and others required a subsequent operation. Presumably some of the cases were not suitable for this operation. Of course, the difficult point in all cecocolonic cases of stasis is to select the operation that fits the individual case. I feel that cecocolostomy, which should have no operative mortality, has a place in selected cases of stasis, due to prolapsed mobile cecum and enlarged sigmoid.

*Ileosigmoidostomy*—For the reasons stated, lateral ileosigmoidostomy has been abandoned. Unilateral exclusion of the colon by the end-to-side ileosigmoidostomy of Lane violates a cardinal surgical principle in leaving the entire colon above the stoma as a blind pouch into which the ileal contents are often forced by reverse peristalsis and the colonic secretions accumulate. Stagnation, fermentation and toxemia frequently ensue, rendering the second state worse than the first. To obviate fecal impaction in the unilaterally excluded colon, it is a wise precaution to do an appendicostomy through a stab wound at the time of the original operation or, as Ochsner suggests, leave the distal end of the ileum open and fix it as a permanent stoma in the abdominal wall at McBurney's point. Each of these procedures provides a vent for gas and a ready means of flushing the colon, which tends to atrophy when kept clean.

The only alternative is total colectomy, the operative risk of which is too great to justify it in other than very exceptional cases of stasis—probably those with persistent, extensive ulceration. Aside from the surgical hazard of colectomy, a vital objection is the sacrifice of the great omentum, which, in the words of C. H. Mayo, reduces "protection, warmth, mobility and the equalization of the abdominal circulation." Another sequel of the removal of the omentum may be matting adhesions of the coils of small intestine, both to one another and to the parietal peritoneum, which have caused acute intestinal obstruction.

In 1915 J. G. Clark reported<sup>2</sup> "Final Result in Twelve Cases of Colectomy," done from two to five years previously. In only six of the twelve cases was the result satisfactory, in six nutrition was markedly improved, all cases showed great temporary improvement in constipation, followed in four by recurrence of severe constipation, X-ray examination in three cases showed dilatation of the ileum in two, approaching the colon

in size, none of the cases developed uncontrollable diarrhoea. Clark emphasizes the fact that the ileum will not uniformly assume the vicarious function of the colon. Hence, in colectomy for stasis, 50 per cent of "satisfactory" end results is the best we can expect in competent hands and under favorable conditions.

Right or partial colectomy, as performed by Quervin in 1904, has been revived recently with many modifications and under new names. This operation embraces removal of the terminal ileum, the cecum and ascending colon and the performance of a lateral ileotransversostomy. The surgical risk is naturally considerable and the symptomatic results are often disappointing. They indicate that removal of the right colon for stasis should be still further restricted. The desideratum is the development of a technic that will preserve the ileocecal valve and thus prevent a reflux of the colonic contents into the ileum, causing its infection, dilatation and permanent anatomic and physiologic impairment. Barber has reported successful experiments on this line.

Bloodgood made the important observation that after successful resection of the colon for neoplasms there is rapid restoration of bowel function. This is in striking contrast to the removal of segments for chronic stasis. In some cases, although constipation is relieved, the toxemia persists. Naturally this should be true, for after the bowel has been long subjected to stasis, profound changes occur in its structure, resulting in disorganization of the neuro-muscular apparatus of the involved intestine.

We may say, then, that the surgery of chronic intestinal stasis cannot be standardized. Each case must be made the subject of a separate study. Conservative surgery will relieve certain types of obstructive stasis. The radical short-circuiting operations and colectomy, either partial or total, even when survived, fail to relieve the symptoms in a large percentage of cases. Other procedures, simpler and more in harmony with physiology, must be found. These will come through experiment, through new methods, developed in the laboratories of experimental surgery, before applying them to man.

In all cases where profound tissue changes and marked general toxemia are present, operation is only the first step in the treatment. The physician must keep these cases under observation and direct their hygiene, diet and mode of life, with the object of relieving the toxemia that has been years in developing; otherwise the patient will not derive the full benefit of his operation, and even conservative surgery, when properly performed in carefully selected cases, will be discredited.

#### REFERENCES

- 1 Yeomans, F. C. *Amer Jour of Surgery*, Jan, 1913.
- 2 Clark, J. G. *Surg Gyn and Obst*, Vol XXII, 1916 page 533.

# Discussion

DR MAURICE PACKARD, New York City. When I first glanced at the title of Dr Yeomans' paper, "Conservative Surgery of Chronic Intestinal Stasis," the words of the vaudeville man, "there ain't no such animal," flashed through my mind. Seriously speaking, however, this subject has been of intense interest to me ever since Dr Lane's propaganda in this country. Like a great many other medical propagandas in the hands of enthusiasts, it began to run, and is still running wild. Colectomy, the logical result of this work, was and is being done, for every conceivable ailment, from an ingrown toe nail to epilepsy and insanity. I happened to be in the midst of some of this work and had an excellent chance to see the end results of some of the cases, those cases, I mean, that did not die from the operation.

In our work on these cases, there was an angle which has not been touched upon to any great extent and was brought to our attention through the study of a series of cases. A woman of 24 who was operated successfully for colectomy, that is, successfully for the operation, but whose symptoms persisted in spite of mineral oil and after care, became pregnant. It seemed strange that during her pregnancy she felt well, but after parturition she relapsed into the same condition, which has been described under "intestinal stasis."

In association with this case was another woman who was about to be operated for stasis, due to kinks, etc., when she became pregnant, and during the entire time of her pregnancy, when the mechanical obstruction should have been worse, felt very well.

Now, it seemed to us rather strange that if an individual suffering from stasis when pregnancy ensued, which you would think would add to the obstructive feature should feel better.

During this time there was a youth who suffered from dyspepsia, complicated with heart block, whose gastrointestinal tract we were studying, on account of iliac stasis and diminution of peristalsis. This boy had only one evacuation in a week and his peristaltic movement of the stomach consisted of one systolic contraction in three minutes when we expected it least three in one minute. This case resembled from the X-ray and fluoroscopic examinations the other cases of stasis. We thought that this case might give us a clue to those cases of intestinal stasis which were not due to out-and-out conditions of mechanical obstruction, and we felt that during pregnancy when we know the thyroid gland is stimulated to increased activity, the reason why a great many cases of stasis become better is due to the increased amount of thyroid hormone and the stasis was really due to lack of muscular innervation which depends to a great

extent upon the hormones of the thyroid and other correlated secretory organs.

Deficient muscular innervation may, again, be due to spinal cord disease, and I urge upon all you surgeons that a thorough examination for evidence of cerebrospinal lesions should be made before operative interference for stasis is suggested. I speak about this point very strongly, as I have seen cases, and Dr Yeomans can bear me out about one, where a man was opened up several times and was finally to be submitted to a colectomy for a serious stasis, when in consultation it was discovered that this stasis was due to locomotor ataxia.

As my time is up, I would like to say that Dr Yeomans hit the nail on the head when he said that surgery should only be resorted to for actual mechanical obstruction!

DR DWIGHT H. MURRAY, Syracuse. I heartily agree with practically everything that Dr Yeomans has said, and he has said it so well, that it seems scarcely necessary to emphasize very much of it.

One of the things brought out in the cases spoken of by Dr Packard is that many of these are treated without proper examination. Our reason for that is that many men in our profession have never been taught much about diseases of the rectum, another reason is that such an examination is very distasteful to many physicians, the result is that these patients do not have a proper complete examination and oftentimes, when one is attempted, the examiner cannot tell what the trouble is when he is looking at it. Many men are not primarily blameworthy because many of our colleges do not teach proctology except under the chair of general surgery, and many times he is not a competent teacher in proctology.

So much can be said on this subject that I hardly know just what to say and keep within the time allotted me. Perhaps I might illustrate it by a case that I saw on the first of March. The woman had been in a sanatorium for eight months under medical care. When I saw her she was so weak that she couldn't raise her head from the pillow without fainting and becoming incoherent in her talk. She had been under the care of sixteen physicians none of them surgeons. I saw her in a city where for knowledge they would not take a back seat for anybody. Four were men of national reputation. Her history showed that no rectal examination had been made. It was treated as an internal medical case with a question of the diagnosis being Hirschsprung's disease. They depended for their rectal examination upon a series of X-ray plates. One of the physicians remarked that he had never seen such an abnormally dilated colon. The colon was enormously dilated by gas that I found on examination was the result of fecal

impaction at the distal end of the colon. The rectum had not been examined nor a proctologist called. I found internal hemorrhoids and a large impaction. She was taken from the sanatorium to a hospital, where I operated upon her, and without any medicine at all, she has continued to improve, though I fear the colon has been so badly damaged that an appendicostomy will finally be needed.

DR FRANK C YEOMANS, New York City. In closing I wish to thank the gentlemen who have taken part in the discussion. It seemed to me sufficient time has now elapsed since intensive work has been done in the surgery of intestinal stasis to review the operations and see if we could crystallize our opinions on the operative side of stasis. That was my only argument, but it was rather difficult to compress it in a paper of twenty minutes.

Now, I tried to emphasize, of course, the great importance of making the diagnosis, that is, reaching the basic factors in a given case, and said in that connection that no one who hasn't the time nor facilities nor desire to make a thorough examination and reach a diagnosis should treat these cases either medically or surgically. I think that is the trouble. Many of these patients have been hurriedly examined, diagnoses made and operations performed, with very disastrous results. An examination should always include a neurologic examination. Every physician is capable of doing a superficial neurologic examination, enough at least to give him a cue if something serious is wrong with the nervous system, and if so, to refer the patient to a competent neurologist for a thorough examination before proceeding to any operation.

## THE ESTIMATION OF CARDIAC STRENGTH AND THE IMPORTANCE OF CONSERVING ENERGY DURING AND FOLLOWING OPERATIONS

By RALEIGH R. HUGGINS, M.D.,  
PITTSBURGH, PA.

**A** CORRECT estimate of the reserve strength of a patient must be made before the surgeon can give a reasonable assurance of the safety of the procedure. Vital resistance must remain a complex subject, and one's conclusions can only come with the final analysis after a most careful study of the various important organs of the body. Not the least important of these is a measurement of the cardiac strength. Rapid progress is being made in the study of the heart and blood vessels. New instruments of precision are being devised and it

is not unlikely that soon there will be disclosed a method for measuring accurately the strength of a given heart, together with the whole muscular envelope of the circulatory system. The responsibility of the surgeon at present is so great, especially in dealing with patients undergoing elective operations that he must give considerable attention to this subject if he wishes to avoid a tragic death occasionally. To see a patient develop the signs of a dilated heart, and die suddenly or within a few hours after an ideal operative procedure or possibly some days later when about to leave the hospital adds much to the blood pressure of the surgeon. When this happens after an operation which is urgently indicated, it is bad enough, but if it occurs when the patient might have lived for some time regardless of the operation it is very disturbing to all concerned. Where there is any doubt about the resistance, it is not sufficient for the patient to have been passed upon by the Internist as a good risk in every instance, because it is impossible for him to know and calculate how much extra work the heart may be called upon to do, and too seldom do medical men have the time and opportunity to closely observe post-operative conditions. It, therefore, becomes necessary for the surgeon to have a keen appreciation of the subject of vital resistance, muscular tone, and strength of the heart muscle, because he alone knows to what extent he expects to drive a given heart. He should be qualified to know how much he may be able to draw upon the reserve. Valvular lesions are so thoroughly understood as to be well recognized as factors of danger in surgical work. The dangers in the heart muscle causing weakness, and to which we refer, has been commonly referred to as myocarditis, and the same condition which finally produces serious danger or death as acute dilatation. The causes of myocarditis may be many, but it is probably true that the majority of such cases with which the surgeon has to do comes from infection or chronic toxæmia. This is true particularly in chronic infection of the gall-bladder, the pelvic organs in women, and not infrequently from the toxæmia incident to fibroids of the uterus or pregnancy. It is very interesting to note that there is a striking relationship between the general muscular tone of an individual and that of the cardiac vascular system. We have previously called attention to this subject in a discussion of tissue tone as an index of vital resistance, with special reference to prolapse of the uterus.

There can be no doubt that the risk in operating upon patients with the above mentioned conditions is considerably increased by this factor, and that patients die not infrequently of the strain on the circulatory apparatus. So far as the study of the heart is concerned, it is important that we keep in mind that it is composed

\* Read before the Annual Meeting of the Seventh District Branch, at Canandaigua, September 27, 1917.

of the same structures as the blood vessels, and that it is but a differentiation of the muscular envelope, every part of which is capable of maintaining a certain pressure. The maintenance of the circulation is not carried out by the heart alone. The blood vessels constitute an integral functioning factor. It is difficult to determine how much weakening of either factor may lead to dilatation, but it is important that the intimate relationship be kept in mind. The variations which may occur are so complex that we should be able to make accurate measurements on the envelope as a whole if we are to be certain of its efficiency. There is absolutely no difference between a weakened biceps and a flabby heart muscle, and both may result from changes in the tissues caused by some obscure toxemia or chronic infection. It is important that an accurate estimate of the tissue strength in general be made, for in our judgment much depends upon a keen appreciation of the amount held in reserve in every patient.

In this connection it is interesting to refer to the observations made by Sir James MacKenzie and Dr. Wilson in a study of 400 soldiers of the present war who had been certified and treated as having heart affections. In their opinion in at least 90 per cent of them, the heart is not primarily at fault. They considered the condition as one of general exhaustion and the circulatory symptoms but evidences of a general state. In the majority of the cases the onset of this exhaustion was found to be connected with an infection.

The problem then is, how can the cardiac strength be determined, and in the presence of weakness how can we arrange the course of the operative procedure in order to avoid a serious result? It so often happens that after years of stress due to some definite pathological condition the patient is presented to the surgeon as the court of last resort. It is in this type that the utmost caution must be exercised and where the keenest judgment is necessary to calculate the amount of strain that the patient thereby handicapped may endure. It is unfortunate that the proper estimate of strength under these conditions must still remain one of personal equation, and that no instrument of precision has as yet been devised whereby the real power of the circulatory system may be revealed. Study of the patient's history, together with careful observation are and always will remain reliable aids in forming an opinion as to the probable amount of reserve strength in a given patient. Inquiry should always be made for the presence of shortness of breath on exertion, and in doubtful risks the effect of exercise should be noted. Much may be learned by careful examination of the resistance and the consistency of the muscles at rest and in action. A history of any disturbed

conditions in the function of the thyroid gland always suggests the probability of friable muscular tissue lacking both tone and strength. The same is true in the presence of fibroid tumors of the uterus. Every case of chronic infection of the gall-bladder is below par in this respect and the high mortality following operations upon this organ is largely due to weakness not only to the heart itself, but of the entire muscular tone.

If the histories of these patients are gone into carefully, we find that they tire easily, suffer from dizziness, dyspnoea on exertion, weak spells or slight swellings of the feet or ankles, although the heart appears normal by the ordinary methods of examination. It is surprising when on the lookout how frequently this condition is found in stout women of middle age, the type that are afflicted with gall-bladder disease, prolapse of the uterus and fibroids, and we are convinced that many of the deaths that occur one, two or three weeks after operation, in this type of patient and are attributed to embolism or various causes are in reality due to circulatory complications, many of which could be avoided by more careful pre-operative study.

The electro cardiograph is an instrument from which much was expected in the revelation of obscure conditions in the heart muscle. Our experience leads us to believe that it is an important aid, but whether it is of great value in measuring the actual strength of heart muscle has not yet been determined. Perhaps one of the best methods for measuring the functional capacity of the heart, and one which offers the greatest possibilities, is that described by Graupner and partly confirmed by the interesting work of Barringer (Archives of Internal Medicine, November 1915, XVI No 5, and March 1916 XVII, No 3). The essential features of this test are the deductions made from the form of the systolic blood pressure after measured amounts of work. Barringer states that although he is unable to confirm some of his results, he believes that the method of making frequent readings of the pulse rate and systolic pressure after measured amounts of work furnishes the key to this problem of determining the heart's efficiency. These experiments are carried out by the bicycle ergometer and with dumb bells. He concludes that in the pulse rate the blood pressure reactions to graded work we possess a valid test of the heart's functional capacity. If the systolic blood-pressure reaches its greatest height not immediately after work, but from 30 to 130 seconds later, or if the pressure immediately after work is lower than the original level, that work, whatever its amount has overtaxed the heart's functional capacity and may be taken as an accurate measure of its efficiency.

For several years we have made a careful study of the blood pressure before and during operation. We are impressed with the importance of the pulse-pressure, both as an index to strength previous to and as a danger signal during operation. That it is of great value in all cases of marked weakness is undoubtedly true, but whether it can be relied upon in every instance where the condition is in doubt is uncertain. Our method is to take the pulse-pressure with the patient at rest. If after exercise there is a pronounced fall in the pulse-pressure it is taken as an indication of cardiac weakness, and a most careful study is made of the history and general condition of the patient, in other words, we regard the lack of stability of the pulse-pressure under exercise as an indication of cardiac weakness. The details of our work has been described by my associate, Dr. Cashman, in a recent article on this subject, which appears in the *American Journal of Medical Sciences*. There is no doubt that one of the most important danger signals that we possess in the anticipation of shock and the cardiac failure accompanying it during ether anesthesia is shown in a fall of the pulse-pressure. Attention has been called to this by Moots, who has made accurate records of the systolic and diastolic blood-pressure in a large series of cases. It is also of equal importance in the prognosis of very sick patients after operation. Constant fall in the pulse-pressure indicates serious danger.

With this problem in mind, and having a patient where operation is elective and where there is no hurry about its immediate performance, how shall we proceed in order to make the operative excursion safe and to restore this patient to health with the least expenditure of energy? If we were going to send the patient to war, we would certainly not drive her into a ten-mile march without days of preparation. Patients of this class are very much below par, and for extra work in ordinary life much time would necessarily be spent in bringing them to the highest point of resistance. Many of them need prolonged rest and careful nourishment in order to stand the strain of a difficult operation. Our experience leads to the belief that rest in bed for a sufficient period of time is of great value to the class of patients under discussion. If we are to improve our results, it is necessary to insist upon this preliminary rest, together with all other measures necessary to bring about an increase in strength. The surgeon must insist upon this in spite of any sentimental opposition on the part of the patient. The fear and nervousness disappears shortly after they are once comfortably located in the hospital. Patients and friends seldom object if these conditions are carefully explained. It is not necessary to go into detail with the patient as to the exact time when operation will be performed. The admin-

istration of sedatives is of great assistance in maintaining a quiet disposition. A few good nights' sleep is a wonderful help, and it is gratifying to note the rapid change which usually occurs. Previous to operation every effort should be made to quiet the nervous system. Large doses of bromides, together with a good hypnotic at bedtime should be given for forty-eight hours. Before going to the operating room sufficient morphia should be given to make the patient almost sleep. All this quiets the heart's action, and the nervous system as well.

We now come to the selection of the anæsthetic, which is one of the most important elements that enter into any surgical procedure where weakness of the cardiac muscle is concerned. We have many methods and all very satisfactory in the usual cases where there is a wide margin of safety. It is not our intention to advocate any particular kind of method of anæsthetic, but to point out some advantages and some of the bad effects of the various methods as applied to patients having a weak cardiac muscle.

Sufficient experience has been gained to enable us to formulate some conclusions as to the merits and dangers of the various methods of anæsthesia. It must be admitted that there is no anæsthetic at present which does not have certain dangers immediate or remote. Because a patient does not meet with sudden death as a direct result of the anæsthetic by no means alters the fact that not infrequently patients die several days following the operation from weakness and cardiac failure, due largely to the effect of some form of inhalation anæsthesia. This is true of both nitrous oxide and ether. If one carefully observes the effect of ether or nitrous oxide during the first thirty minutes of administration he is impressed with the effect upon the cardiac vascular system in many instances. The stimulating effect is almost startling at times, and this is especially true when the patient takes the anæsthetic badly. The increased pulse rate, rapid respiration, engorged veins, contracted muscles all indicate severe strain and great expenditure of energy. This is soon followed by the exhaustion which is certain to follow long-continued activity, the degree of which depends entirely upon the length of time and the severity of the procedure. We have the picture of the untrained athlete at the end of the race! Exhaustion, skin drenched with perspiration, pallor, rapid weak heart action and a condition that will no longer respond to the stimulating action of ether. We would be startled if a similar state were induced by chasing the patient over a long distance while in a state of consciousness. If the patient were in a position to protest, it might be much better for him under certain circumstances. It is true that these anæ-

thetics must still remain the safest and best for routine work, but I think it is well for us to appreciate their effect as applied to this particular subject and at least use them with the full knowledge of what may be the result. In our own work most of which is done in the lower abdomen, spinal anesthesia is used very often in order to avoid the above described effects. In spinal anesthesia the blood pressure falls, the respirations are slow and shallow, the pulse rate is reduced and the heart is working more slowly and against less peripheral resistance. The skin is pale and there is less than the normal loss of fluid. The muscles are completely relaxed and the patient presents the appearance of sub-anesthesia. A patient with combined Drummich schief and spinal anesthesia has the appearance of one in a deep hypnotic sleep so that after an operation of one and a half hours' length with all bodily activities sub-normal and all traumatic impulses blocked the patient has expended much less energy than under normal conditions.

One of the most valuable things about spinal anesthesia is the rest that occurs in the heart muscle during its effect. In any forms of inhalation anesthesia, especially with ether or nitrous oxide, there is a certain marked stimulation of the heart. That this results in fatigue after a time is certain and in our opinion the symptoms of so-called shock occurring during or following severe operations is often due to exhaustion of the heart muscle which is primarily caused by the ether drive. During spinal anesthesia the whole splanchnic area is out of commission and the greater part of the blood lies in the large veins of the abdomen. There is no necessity for extra work on the part of the heart, consequently it is at rest and enjoys a more perfect rest than during the deepest sleep. There is a corresponding fall in both systolic and diastolic pressure, and if one desired to secure a perfect rest for the heart muscle no better way could be derived than to administer spinal anesthesia. Consequently instead of driving a tired organ to death as sometimes happens with ether it is given a period of perfect relaxation and rest. A lowered mortality in certain cases where this is an important factor is alone a sufficient excuse for its use.

After operation patient should be kept comfortable. The extra shock from severe post-operative pain not only increases the mortality occasionally, but it consumes the reserve energy of the patient and prolongs convalescence. Opium should not be given if contra indicated but they seldom are in our experience. We give routinely sufficient opium to keep the patient comfortable and quiet for the first forty eight hours. After this if there is wakefulness some sleep-inducing drug such as veronal is given at bedtime for the first few nights.

## Correspondence

COUNCIL OF NATIONAL DEFENSE  
MEDICAL SECTION, WASHINGTON

August 12 1918

Editor NEW YORK STATE JOURNAL OF MEDICINE

MY DEAR DOCTOR

1 On August 8th the following statement was authorized by the War Department signed by Newton D Baker Secretary of War

The War Department to day has suspended further volunteering and the receipt of candidates for officers training camps from civil life. This suspension will remain in force until the legislation now pending before the Congress with regard to draft ages is disposed of and suitable regulations drawn up to cover the operation of the selective system under the new law.

Fearing that this order might be misinterpreted by doctors who would not distinguish between enlistment as a private soldier and enrollment as an officer in the Medical Reserve Corps on August 9th I asked the Secretary of War to issue a statement making clear this point.

2 In response to this request, on August 10th the following statement was authorized by the War and Navy Departments

Orders issued by the War and Navy Departments on August 8th suspending further volunteering and the receipt of candidates for officers training camps from civil life do not apply to the enrollment of physicians in the Medical Reserve Corps of the Army and the Reserve Force of the Navy. It is the desire of both departments that the enrollment of physicians should continue as actively as before so that the needs of both services may be effectively met.

(Signed) JOSEPHUS DANIELS  
Secretary of the Navy  
(Signed) NEWTON D BAKER,  
Secretary of War

3 It is desirable that the definite attention of the medical profession be called to this interpretation in order that enrollment for the Medical Reserve Corps of the Army and the Reserve Force of the Navy which is going on so rapidly at the present time shall not be interrupted. Trusting that you will give this prominent space in the next issue of your Journal.

Yours very truly,  
FRANKLIN MARTIN  
Chairman General Medical Board

NEW YORK STATE LIBRARY ALBANY N Y  
Editor NEW YORK STATE JOURNAL OF MEDICINE  
MY DEAR DOCTOR

I would be pleased to have you draw the attention of the physicians of the state outside of New York City to whom the facilities of the New York Academy of Medicine are not available to the following statement concerning the State Medical Library which is maintained for the benefit of every physician in the state.

Although many physicians are using the Library constantly the great majority are ignorant of the resources at their command here and of the ease with which medical literature is made available to them. The Library is working on the same general plan as the modern business libraries which save time for busy men by looking up references on any topic requested and the books are sent out by mail to any point in the state without expense to the borrower except payment of return postage. Twenty five thousand volumes and 500 current journals are now available and the collection is increasing as rapidly as our appropriation permits.

Very truly yours

FRANCES K. RAY

chemicals in differentiating bacteria leads one to believe that there are brilliant possibilities in this little known field. The clinician also will find here much food for thought for these papers demonstrate clearly the practical value and application of bacteriological methods to clinical work and the necessity on the part of the clinician of a due appreciation of the significance attaching to laboratory results

E B SMITH

**THE INTERNAL SECRETIONS, Their Physiology and Application to Pathology** By E GLEY, M.D., Member Academy Medicine, Paris, Professor Physiology, College of France. Translated and edited by MAURICE FISHBERG, M.D., Clinical Professor Medicine, N Y University and Bellevue Hospital Medical College. Authorized translation, Paul B Hoeber, 67 East 59th Street, N Y City, 1917. Price, \$2.00

This little book takes up the question of internal secretions from the very beginning of the work on the subject, and, judging from the great number of references given in the bibliography, Professor Gley must have expended a vast amount of time and labor in its preparation.

The matter is divided into three main chapters, of which the first deals with the origin and development of the concept of internal secretions, the second with the distinctive characteristics of the internal secretory glands and their principal products, and the third takes up the function of these glands.

The major portion of the volume deals with the history of the study of the endocrine glands and their normal function and activities, and only a few pages at the end are devoted to the diseased function.

While the reciprocal correlations are fully gone into there is a disappointing lack of explicitness on the character and function of the secretion of each individual gland, and a dearth of material on the diseased function which has come recently to play such an important part in both diagnosis and treatment.

W H DONNELLY

**A TREATISE ON THE PRINCIPLES AND PRACTICE OF MEDICINE** By ARTHUR R EDWARDS, M.D., Professor Principles and Practice Medicine, Clinical Medicine. New (third) edition, thoroughly revised. Octavo, 1,022 pages, with eighty engravings, twenty-three full-page plates in colors and monochrome. Cloth, \$6.00 net. Lea & Febiger, Philadelphia and New York, 1916.

This volume has been decreased in size, though it contains a vastly greater amount of information than its predecessor. Brevity and clearness have been gained by condensation. The subject, therapeutics, has received particular attention. There are new chapters covering the important advances made in this department in late years. The thoroughness and extent and beauty of illustrations which characterize them are surprising. They will prove of advantage for ready reference.

A thorough system has enabled a master of his subject to cover the wide range of modern practice in a single volume. Impossible as this may seem, a careful examination will demonstrate the fact. This is a volume to read, study, refer to and depend upon.

The author is to be congratulated and thanked for this valuable contribution to our literature and practical procedure.

H A FAIRBAIRN

**THE HEALTH-CARE OF THE GROWING CHILD** By LOUIS FISCHER, M.D. Author of "Health-Care of the Baby," etc. Attending Physician in Charge, Babies' Ward, Sydenham Hosp., and Willard Parker and Riverside Hosps., Former Instructor Children's Diseases, N Y Post-Graduate Hosp., etc. 12mo, cloth, 354 pages, indexed, illustrated. Price, \$1.25 net, by mail, \$1.37. Funk & Wagnalls Company, Publishers, New York.

This book about the child, with its companion volume, "The Health Care of the Baby," by the same author, gives guidance and much valuable advice to mothers from the birth of the baby throughout childhood.

The preface says, "The object of this book is to instruct and guide the intelligent mother when remote from her physician, or to advise her sufficiently in case of emergency until medical help is required and can be procured."

With this object in mind due allowance must be made for the author's attempt to teach the mother to recognize the various contagious diseases. When a physician is many times in doubt as to the diagnosis it is folly to expect an untrained mother to distinguish them. This is especially dangerous when applied to the differential diagnosis of smallpox and chickenpox, though the rarity of the former removes much of the danger in practice.

In the chapter on "Channels of Elimination," the bald statement is made that "a child should pass at least one quart of urine in the twenty-four hours." It would have been much better to recognize that not until the age of five years does the child pass as much as 20 to 40 ounces in the twenty-four hours.

Special commendation should be given to the chapters on "Bathing," "Ventilation," and "Exercise—Amusements," which contain much common sense advice, and if followed out to the letter would result in such benefit to the child that the services of the physician would be needed more infrequently than at present.

In the chapter on "Sleep," the statement is made that "The eating of too much candy may cause worms which will irritate the child." This view of the cause of worms may be useful in diminishing the intake of candy, but has no foundation as a medical fact.

Under the discussion of rickets the author says, "Bolters who eat quickly, do not chew well, and digest badly, usually develop rickets." Real chewing cannot take place until the development of the molar teeth, and as the first molars do not come through until about fifteen to eighteen months, and as the age incidence of rickets is from six months to eighteen months, this particular statement does not accord with our present knowledge, and no account is taken of the race incidence, which is an important factor.

Too much emphasis cannot be given to the advice given on page 133, "Do not give cathartics continuously, they are weakening. Rely on diet principally, to modify constipation." Every mother would do well to copy this advice and hang it on the wall of the nursery.

We are glad to see the author on the side of those who believe in raw milk for infants and children. On page 135 the following simple explanation is given: "The body requires a live factor which is present in raw milk and which disappears when the milk is boiled or preserved." If more medical authors would utter this correct view more loudly, we would not be in danger of being overwhelmed by pasteurization, sterilization, etc., to the detriment of the child.

In the description of bronchial asthma recognition is given the anaphylactic origin as far as food ingestion is concerned, but it might have been well to call attention to the inhalation and bacterial origin of the same.

One cannot dismiss this book without mentioning especially some of the excellent illustrations, some of them in color, which add to the interest of the book.

ARCHIBALD D SMITH, M.D.

## Deaths.

PAUL E BETOWSKI, M.D., Bath, died July 2, 1918.  
ARTHUR D DRYFOOS, M.D., New York City, died August 22, 1918.

JOHN E HAMILL, M.D., Phoenix, died July 25, 1918.  
ALEXANDER M JEFFREY, M.D., New York City, died September 1, 1918.

H H REYNOLDS, M.D., Malone, died July 27, 1918.  
FRED CONIFF RICE, M.D., Ripley, died June 21, 1918.

FRANK H ROSS, M.D., Brooklyn, died August 12, 1918.  
LOUIS H A SCHNEIDER, M.D., New York City, died August 23, 1918.

JOHN WARREN, M.D., New York City, died August 20, 1918.

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT, M.D., Editor  
FLOYD MILFORD CRANDALL, M.D., Acting Editor

Business and Editorial Offices 17 West 43d Street New York U S A  
Address Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N Y U S A

## COMMITTEE ON PUBLICATION

S W S Tamm M.D. Chairman N.Y.C.      Edward Livingston Hunt M.D. New York      A Clifford Mercer M.D. Syracuse  
W Meddough Dunn M.D. Bronx      Frank Van Fleet M.D. New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

OCTOBER 1918

No 10

## ORIGINAL ARTICLES

### IS CESAREAN SECTION JUSTIFIABLE IN ECLAMPSIA AND PLACENTA PREVIA?\*

By GEORGE L. BRODHEAD, M.D.,  
NEW YORK CITY

AT the very beginning of his paper, the writer wishes to emphasize his belief that probably in a large percentage of cases of eclampsia and placenta previa, abdominal section is unwarranted and unjustifiable. When the child is dead or not viable, when the patient is in active labor with the cervix partially dilated, or easily dilatable, and when the patient can not have the advantages of a well equipped hospital, and the services of a competent surgeon other methods of procedure may be not only more advisable, but absolutely indicated. On the other hand, increasing experience compels us to believe that in a considerable number of cases, Cesarean section is the safest, easiest and most satisfactory method of treatment.

The Cesarean operation for eclampsia, brought so prominently before the profession by Peterson in his paper presented in 1914 has now been used in a large number of cases. We recall that he found the maternal mortality in operations performed between 1908-1913 was 25.79 per cent. In one series of 91 cases by 13 operators each with five or more cases to his credit, the mortality was 18.68 per cent, and in this series ex-

cluding septic and moribund cases, the mortality was 13.15 per cent. Since 1908 and reckoning only viable living child, the fetal mortality was 3.62 per cent. Including deaths of infants within the first few days the mortality rose to 10.69 per cent. Peterson claimed, and rightly so, that the operation has never been given a fair trial. Performed soon after the first convulsion, we feel confident that Cesarean section, in primiparae at or near term, with undilated cervixes, soon after the first seizure, would give a lower mortality than Peterson's series, and, this being the case, would not the small fetal mortality be a very excellent reason for performing the operation? Many of the infants are toxic, but a prolonged labor with operative interference will surely increase the infant mortality, whereas a speedy delivery will greatly decrease the infant mortality. In a recent case, with a primipara at 8½ months, the writer wished to perform Cesarean section, but being unable to secure permission, he tried out the conservative method with large doses of morphine, and the usual climactic treatment, the patient failing to go into labor although a De Ribes bag and rectal tube had been used to induce pains, and nearly 48 hours after the beginning of treatment convulsions continuing and no progress having been made the child being still alive, it was necessary to complete delivery by the high forceps operation a dead child being extracted. The mother made a good recovery, but we feel that had Cesarean section been done the child could also

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 22 1918

chemicals in differentiating bacteria leads one to believe that there are brilliant possibilities in this little known field. The clinician also will find here much food for thought for these papers demonstrate clearly the practical value and application of bacteriological methods to clinical work and the necessity on the part of the clinician of a due appreciation of the significance attaching to laboratory results. E B SMITH

**THE INTERNAL SECRETIONS, Their Physiology and Application to Pathology** By E GLEY, M.D., Member Academy Medicine, Paris, Professor Physiology, College of France. Translated and edited by MAURICE FISHBERG, M.D., Clinical Professor Medicine, N Y University and Bellevue Hospital Medical College. Authorized translation, Paul B Hoeber, 67 East 59th Street, N Y City, 1917. Price, \$2.00

This little book takes up the question of internal secretions from the very beginning of the work on the subject, and, judging from the great number of references given in the bibliography, Professor Gley must have expended a vast amount of time and labor in its preparation.

The matter is divided into three main chapters, of which the first deals with the origin and development of the concept of internal secretions, the second with the distinctive characteristics of the internal secretory glands and their principal products, and the third takes up the function of these glands.

The major portion of the volume deals with the history of the study of the endocrine glands and their normal function and activities, and only a few pages at the end are devoted to the diseased function.

While the reciprocal correlations are fully gone into there is a disappointing lack of explicitness on the character and function of the secretion of each individual gland, and a dearth of material on the diseased function which has come recently to play such an important part in both diagnosis and treatment.

W H DONNELLY

**A TREATISE ON THE PRINCIPLES AND PRACTICE OF MEDICINE** By ARTHUR R EDWARDS, M.D., Professor Principles and Practice Medicine, Clinical Medicine. New (third) edition, thoroughly revised. Octavo, 1,022 pages, with eighty engravings, twenty-three full-page plates in colors and monochrome. Cloth, \$6.00 net. Lea & Febiger, Philadelphia and New York, 1916.

This volume has been decreased in size, though it contains a vastly greater amount of information than its predecessor. Brevity and clearness have been gained by condensation. The subject, therapeutics, has received particular attention. There are new chapters covering the important advances made in this department in late years. The thoroughness and extent and beauty of illustrations which characterize them are surprising. They will prove of advantage for ready reference.

Thorough system has enabled a master of his subject to cover the wide range of modern practice in a single volume. Impossible as this may seem, a careful examination will demonstrate the fact. This is a volume to read, study, refer to and depend upon.

The author is to be congratulated and thanked for this valuable contribution to our literature and practical procedure.

H A FAIRBAIRN

**THE HEALTH-CARE OF THE GROWING CHILD** By LOUIS FISCHER, M.D. Author of "Health-Care of the Baby," etc. Attending Physician in Charge, Babies' Ward, Sydenham Hosp., and Willard Parker and Riverside Hosps., Former Instructor Children's Diseases, N Y Post-Graduate Hosp., etc. 12mo, cloth, 354 pages, indexed, illustrated. Price, \$1.25 net, by mail, \$1.37. Funk & Wagnalls Company, Publishers, New York.

This book about the child, with its companion volume, "The Health Care of the Baby," by the same author, gives guidance and much valuable advice to mothers from the birth of the baby throughout childhood.

The preface says, "The object of this book is to instruct and guide the intelligent mother when remote from her physician, or to advise her sufficiently in case of emergency until medical help is required and can be procured."

With this object in mind due allowance must be made for the author's attempt to teach the mother to recognize the various contagious diseases. When a physician is many times in doubt as to the diagnosis it is folly to expect an untrained mother to distinguish them. This is especially dangerous when applied to the differential diagnosis of smallpox and chickenpox, though the rarity of the former removes much of the danger in practice.

In the chapter on "Channels of Elimination," the bald statement is made that "a child should pass at least one quart of urine in the twenty-four hours." It would have been much better to recognize that not until the age of five years does the child pass as much as 20 to 40 ounces in the twenty-four hours.

Special commendation should be given to the chapters on "Bathing," "Ventilation," and "Exercise—Amusements," which contain much common sense advice, and if followed out to the letter would result in such benefit to the child that the services of the physician would be needed more infrequently than at present.

In the chapter on "Sleep," the statement is made that "The eating of too much candy may cause worms which will irritate the child." This view of the cause of worms may be useful in diminishing the intake of candy, but has no foundation as a medical fact.

Under the discussion of rickets the author says, "Belters who eat quickly, do not chew well, and digest badly, usually develop rickets." Real chewing cannot take place until the development of the molar teeth, and as the first molars do not come through until about fifteen to eighteen months, and as the age incidence of rickets is from six months to eighteen months, this particular statement does not accord with our present knowledge, and no account is taken of the race incidence, which is an important factor.

Too much emphasis cannot be given to the advice given on page 133, "Do not give cathartics continuously, they are weakening. Rely on diet principally, to modify constipation." Every mother would do well to copy this advice and hang it on the wall of the nursery.

We are glad to see the author on the side of those who believe in raw milk for infants and children. On page 135 the following simple explanation is given: "The body requires a live factor which is present in raw milk and which disappears when the milk is boiled or preserved." If more medical authors would utter this correct view more loudly, we would not be in danger of being overwhelmed by pasteurization, sterilization, etc., to the detriment of the child.

In the description of bronchial asthma recognition is given the anaphylactic origin as far as food ingestion is concerned, but it might have been well to call attention to the inhalation and bacterial origin of the same.

One cannot dismiss this book without mentioning especially some of the excellent illustrations, some of them in color, which add to the interest of the book.

ARCHIBALD D SMITH, M.D.

## Deaths.

PAUL E BETOWSKI, M.D., Bath, died July 2, 1918.  
ARTHUR D DRYFOOS, M.D., New York City, died August 22, 1918.

JOHN E HAMILL, M.D., Phoenix, died July 25, 1918.  
ALEXANDER M JEFFREY, M.D., New York City, died September 1, 1918.

H H REYNOLDS, M.D., Malone, died July 27, 1918.  
FRED CONLEY RICE, M.D., Ripley, died June 21, 1918.

FRANK H ROSS, M.D., Brooklyn, died August 12, 1918.  
LOUIS H A SCHNEIDER, M.D., New York City, died August 23, 1918.

JOHN WARREN, M.D., New York City, died August 20, 1918.

have been saved, and at the time of delivery the mother was in far worse condition than when first seen, having received no benefit whatsoever from the long delay and conservative treatment.

The writer, in 1917, in the *American Journal of Obstetrics and Diseases of Women and Children*, Vol LXXV, No 5, published statistics of 174 published and unpublished cases from a large number of operators in various parts of the country. In this series of 174 Cesarean operations, with eclampsia, 28 women died a maternal mortality of 16.1 per cent. In at least one of the fatal cases the patient had been frequently examined and efforts had been made to deliver from below, a fatal result which we feel should not be attributed to the method as applying to eclampsia cases. One of the women died of pneumonia, two weeks postpartum; another died of intestinal obstruction a few days after operation, one had a ruptured uterus at the time of operation and was septic, another was a case of neglected intense toxemia. Two patients died twelve hours after delivery in convulsions. Excluding these cases, the mortality was 12.2 per cent. In at least three of these seven fatal cases the prognosis would probably have been favorable had the Cesarean been performed soon after the first attack. One hundred and fifty-four children were alive when the operation was done, and of these twenty-nine died, a fetal mortality of 18.8 per cent. This list of deaths includes a case of the writer's in which the fetal heart was very rapid before the section was done, and the child simply breathed several times before death, which certainly could not be attributed to the operation as the child would have been still born had the patient been treated by ordinary methods. Two of the deaths were in premature twins and in one series of twenty-nine cases, six children died within ten days. In another series of twelve cases three very small premature infants died. Deducting the premature, poorly nourished infants of the series, which would probably have died in any event, the mortality certainly would have been much less than 18.8 per cent.

In order to obtain more statistics the writer has obtained, since his last paper, reports of thirty-nine (all but one Schlachner's) hitherto unpublished sections, which are here given in full.

In this latter series there were 35 primiparae, two multiparae, and the parity was unknown in two.

Six of the mothers died a mortality of 15.4 per cent. One patient who had had six antepartum convulsions died of shock two hours after the operation, one patient who had had many antepartum seizures died of eclampsia two days after the operation, convulsions continuing until death; one patient who had 10 antepartum seizures died of toxemia, one patient with eight ante-

partum seizures died of toxemia a few hours after operation, one died of eclampsia after 23 postpartum convulsions, and one woman who had had eight antepartum seizures died without regaining consciousness, with two postpartum seizures.

We believe that had these women been subjected to section soon after the first seizure, the prognosis would have been much better.

Of the infants in this last series, only two premature infants died, a mortality of 5.8 per cent, a very creditable result. One of these children at 7½ months died 24 hours after the operation, and another at 7 months died within a short time.

It will be seen that the last series of 39 sections gives a very much better infant mortality (5.8 per cent) than the first series of 174 (18.8 per cent), the maternal mortality (15.4 per cent), being somewhat lower.

Taking the two series together we have 213 sections with 34 deaths a mortality of 16 per cent. There were 188 living children, of whom 31 died a fetal mortality of 16.5 per cent.

The field of operation has been extended also to the pre-eclamptic cases which have not been included in my paper and many operators, including Polak, Newell, Hare, Potter, Swin, Spaulding, Bandler, Foucher, R. E. Brown and many others, have performed a considerable number of sections with very gratifying results.

The writer of the paper presents these figures with a mind open to conviction, but at the present moment he believes that the Cesarean operation for eclampsia in primiparae, at or near term, with a closed cervix, offers the best prognosis for mother and child.

#### PLACENTA PREVIA

Placenta previa is one of the most formidable of obstetric complications, and although attended, as we know by a comparatively small maternal mortality, yet it is associated with a large maternal morbidity and a very large fetal death rate. It has seemed to me that in our statistics of placenta previa, the element of morbidity has not received the attention and careful consideration from the profession which its serious nature deserves.

Many a patient who recovers, and does not figure in the mortality rate, remains an invalid for weeks or months as a result of hemorrhage, sepsis and laceration of the soft parts, so that maternal mortality is not the only thing to be considered. Then again, while it is true that in a large percentage of cases the child is not viable, there is still a large fetal mortality in children at or near term.

Boyd in the *American Journal of Obstetrics and Diseases of Women and Children*, Vol LXXVI No 1, 1917 reports his statistics from the Philadelphia Lying in Charity in which there

were 59 cases of placenta previa in a total of 8,697 cases, or a ratio of 1 in 147, seven mothers died, 118 per cent. All of the patients who died were exsanguinated on admission, and four of the seven were practically dying. Excluding these, the mortality rate will fall to 5 per cent. The fetal mortality was 79 per cent, but of these children only 50 per cent were viable. Boyd's later work has convinced him that the maternal mortality in Cæsarean section for placenta previa is considerably higher than in the usual methods of handling this condition, and it does not appear justifiable to him to expose the mother to a greater risk on account of the child.

*Maternal and Fetal Mortality* Williams, in his recent text-book, states that in 178 cases reported by Hofmeier, Behm and Lomer, and treated by eleven different operators by the Braxton Hicks method of combined version, the maternal mortality was 45 per cent, whereas 93 cases in the hands of the three above-mentioned men gave a mortality of only 1 per cent. Jellett, at the Rotunda, reports a maternal mortality of 3.69 per cent in 138 cases, Pinard, 2.18 per cent in 183 cases, and Stratz, 6 per cent in 110 personal cases. Kronig and Sellheim reported that 810 per cent die of hemorrhage if not treated by Cæsarean.

The fetal mortality, according to the figures of Kustner, Burger, Graf and Strassman, varies from 35 to 61 per cent. Edgar, in 40 cases treated at the Manhattan Maternity, gives a maternal mortality of 7.5 per cent and a fetal mortality of 32 per cent. De Lee collected 2,153 cases with a mortality of 7.68 per cent and a fetal mortality of 61.44 per cent, McDonald collected 8,625 cases with a maternal mortality of 7.27 per cent and a fetal mortality of 55.5 per cent.

De Lee states that "Cæsarean section is gradually gaining reluctant recognition, and recently the operation has begun to enjoy more, and I think just, popularity. Placenta previa under usual methods shows at best 4 per cent mor-

tality, and its treatment entails great anxiety, much loss of time, and exceptional obstetric skill, to save mother and child. Indications for Cæsarean section will arise in central and partial placenta previa, at or near term with living child, mother in good condition, the cervix closed and a promising difficult dilatation, conditions most common in primiparæ."

Hirst states that, "In 344 cases of placenta previa in Schauta's clinic in Vienna from 1903-1905, treated by rupture of the membranes, dilatable bags, and combined version, the maternal mortality was 5.85, and in 274 cases in Zweifel's clinic the mortality was 8 per cent, making 618 cases, with a mortality of 6.92 per cent. For the children, a mortality of 50 per cent may be expected. The outlook for the child is worse the more nearly the placenta previa is central."

My associate, Dr. George H. Pierce, has kindly prepared for me the following statistics of treatment of 19 cases of placenta previa occurring in 6,700 confinements from the records of the New York Post-Graduate Medical School and Hospital.

Total confinements from April 1st, 1899, to December 28th, 1914, 6,700.

Placenta previa, 19 cases (one in 353).

One of these, No. 1406, was possibly a case of accidental hemorrhage.

Variety: Central, 3, lateral, 2, marginal, 7, low implantation, 1, not mentioned, 6. Of these there was one (1) primiparæ, 17 multiparæ, not mentioned, 1.

Period of gestation: Two from 6 to 6½ months, viable age, 16, unknown, 1.

Results to mother: Living, 17, died, 2. One of these died of tuberculosis and inanition on eighth day post-partum. Mortality, 10½ per cent. Excluding the patient who died of tuberculosis, the mortality is 6.2 per cent.

Results to child: Living twins, single living children, 5, still births, 9, abortions, 2, no record, 1, died on third day, 1. Mortality, 62½ per cent.

The following is a record of each case.

Case No	Variety	Parity	Period of Gestation	Result Mother	Result Child	Treatment
443	Abortion, 6 months Placenta expelled first	2	6 Mo	Good	Abortion	Spontaneous
536	Marginal L O A Twins, prolapsed cord	6	8 Mo	Died 8th day, tuberculosis and inanition	Twins, alive, each 3¾ lbs	Podalic version and breech extraction
576	"Low implantation," hemorrhage first stage only	10	Term	Good	Good	Normal delivery
1190	Lateral	3	Term	Good	Still birth, 5¾ lbs	Podalic version
1406	Placenta Previa, acci- dental hemorrhage, History bleeding in second stage	4	Term	Anaemic, lost 32 oz blood in third stage Recovery	Still birth, 6½ lbs	Precipitate

Case No	Variety	Parity	Period of Gestation	Result Mother	Result Child	Treatment
1529	Lateral	10	7 Mo	Good	Died 3rd day	Forceps
2528	Marginal Breech	10	8 Mo	Good	Still birth, 6 lbs	Anterior foot brought down
2693	Central L O A	8	8 Mo	Weak and very anaemic, but slow recovery	Still birth, 7½ lbs	Dilation cervix, bags Hand through placenta Podalic version Breech extraction Post Partum hemorrhage Uterine tamponade Blood loss total about 40 ounces Uterine tamponade Blood loss total about 40 ounces Placenta removed manually
3073	Marginal R O A	8	Term	Good	Good	Normal delivery
3206	Placenta Previa	11	8 Mo	Good	Still birth	On arrival vagina packed At hospital when pack removed cervix dilated breech spontaneous
3269	Marginal	5	Term	Good	Good	Median forceps
4626	Marginal	2	6 Mo	Good	Abortion	Shoulder presentation, combined cephalic version median forceps
4933	Marginal	9	7 Mo	Good	Still birth	Shoulder presentation, breech induction podalic version manual extraction placenta
5168	Central Breech	6	Term	Good	Good	Cervix two fingers Gauze tampon then bag No 3 and packing around it Legs brought down breech extraction, placenta manually uterus tamponed with iodoform gauze
5176	Central	8	7 to 8 Mo	Died	Still birth	Upon arrival exsanguinated Vagina and cervix had been packed by local physicians At hospital saline infusion hypodermoclysis manual dilation version and breech extraction Placenta manually Uterus packed with iodoform gauze
5610	Lateral	4	Term	Good	? No record	Podalic version breech extraction
5693	Marginal	9	7 Mo	Good	Still birth	Vagina packed with iodoform gauze manual dilation podalic version breech extraction Ergotole per hypo Uterus and vagina packed Placenta manually
5917	Lateral	1	Term	Good	Still birth	Gauze tampon manual dilation of cervix podalic version episiotomy breech extraction placenta manually
6047	Marginal	4	?	Good	Good	Cervix two fingers dilated gauze packing manual dilation podalic version breech extraction incision anterior lip of cervix Placenta manual extraction, uterus packed with iodoform gauze

## PLACENTA PREVIA

Parity	Period of Gestation	In Labor	Variety	Result Mother	Result Child	Operator	Location
1	8½ Mo	No	Marginal	Lived	Lived	Brodhead	New York, N Y
2	8¼ Mo	No	Central	Lived	Lived	Brodhead	New York, N Y
Multip	?	?	Central	Lived	Lived	Brown	Rochester, N Y
2	Term	?	Central	Lived	Lived	Brown	Rochester, N Y
1	8 Mo	No	Central	Lived	Lived	Brown	Rochester, N Y
5	Term	No	Central	Died of postpartum hemorrhage	Lived	Brown	Rochester, N Y
2	34 Weeks	No	Central	Lived	Lived	Brown	Rochester, N Y
7	Term	?	Central	Lived	Lived	Brown	Rochester, N Y
1	7 Mo	No	Central	Lived	Died in 1 hr	Cooke	New York, N Y
?	Term	No	Marginal	Lived	Lived	Cowles	New York, N Y
3	7 Mo	First stage	Central	Died (shock, profuse loss of blood before operation) In extremis when operated upon	Lived 13 days, only 5 lbs	Hare	Boston, Mass
1	Term	No	?	Lived	Lived	Hare	Boston, Mass
1	8 Mo	No	?	Lived	Lived	Hare	Boston, Mass
Multip	?	?	?	Lived	Lived	Hirst	Philadelphia, Pa
Multip	?	?	?	Lived	Lived	Hirst	Philadelphia, Pa
?	8½ Mo		?	Lived	Lived	Judd	Brooklyn, N Y
Multip	7 Mo	No	Central	Lived	Died very soon	Kosmak	New York, N Y
7	8 Mo	No	Central	Lived	Died	Kosmak	New York, N Y
1	Term		Central	Lived	Lived	Kosmak	New York, N Y
5	8¼ Mo	No	Central	Lived	Lived	Mason	Boston, Mass
2	37 Weeks	?	Lateral	Lived	Lived	Newell	Boston, Mass
2	Term	?	Central	Lived	?	Potter	Buffalo, N Y
7	8½ Mo	?	?	Lived	Lived	Potter	Buffalo, N Y
2	8½ Mo	?	Central	Lived	Lived	Potter	Buffalo, N Y
2	Term	?	?	Lived	Lived	Potter	Buffalo, N Y
2	Term	?	Central	Lived	Lived	Potter	Buffalo, N Y
3	Term	?	?	Lived	Lived	Potter	Buffalo, N Y
1	Term	?	?	Lived	Lived	Potter	Buffalo, N Y
1	Term	?	Central	Lived	Lived	Potter	Buffalo, N Y
3	?	?	Central	Lived	Lived	Potter	Buffalo, N Y
1	Term	?	?	Lived	Lived	Potter	Buffalo, N Y
2	Term	?	Central	Lived	Lived	Potter	Buffalo, N Y
1	?	?	Central	Lived	Lived	Potter	Buffalo, N Y
1	8½ Mo	?	?	Lived	Lived	Potter	Buffalo, N Y
?		Yes	Central	Lived	Lived	Polak	Brooklyn, N Y
1	Term	No	Central	Lived	Lived	Quigley	Rochester, N Y
1	8½ Mo		?	Lived	Lived	Quigley	Rochester, N Y
5	6½ Mo		?	Lived	Lived	Quigley	Rochester, N Y
?	30 Weeks	No	Lateral	Lived 5 hours Chronic endocarditis, Chronic nephritis, Eclampsia	2¾ Lbs Lived	Spaulding	San Francisco, Cal
?	33½ Weeks		Central	Lived	Lived	Spaulding	San Francisco, Cal
1	8½ Mo	No	Central	Lived	Lived	Stein	New York, N Y
3	7¾ Mo		Central	Lived	Lived	Stein	New York, N Y
3	8 Mo	No	Partial	Lived	Lived	Ziegler	Pittsburg, Pa
1	Term	No	Central	Lived	Lived	Ziegler	Pittsburg, Pa
3	Term		Partial	Died 10 days, general peritonitis	Lived	Ziegler	Pittsburg, Pa
1	8¼ Mo	No	Partial	Lived	Lived	Ziegler	Pittsburg, Pa
5	7 Mo	No	Central	Died 8 days, peritonitis and pneumonia	Died in 4 hours Premature	Ziegler	Pittsburg, Pa
1	8 Mo	No	Lateral	Lived	Lived	Name lost	

The writer has recently sent out a questionnaire to many obstetricians throughout the country, and he is able to present statistics of 48 hitherto unpublished sections, as follows:

From these statistics, the following results have been tabulated:

Primipare	17
Multipare	26
Unknown	5
Total number of cases	48
Central placenta previa	27
Partial placenta previa	8
Unknown	13
Maternal mortality	5—10 8%
Fetal mortality	5—10 8%

From these figures, the maternal mortality seems high, but in the analysis of the cases, we find that one patient died of postpartum hemorrhage, one was "in extremis" when operated upon, having had very profuse blood loss, one lived five hours, dying of eclampsia chronic nephritis, and chronic endocarditis two were classed as "bad cases," dying of general peritonitis, on the 8th and 10th days respectively. If we exclude the patient who was operated upon when "in extremis," and who would have died under any circumstances, the mortality falls to 83%. If we exclude the eclamptic, who died with chronic nephritis and chronic endocarditis and the previous case, we have a mortality of 64%. Excluding these two and the two "bad cases" in the list, the mortality is 2%.

Of the five children who died four were babies at seven months, one of which lived one hour, one lived four hours, another "a very short time," and one lived thirteen days. Only one child in the series over seven months died, making a mortality of 32%.

Assessing the figures for mother and child, and taking into account also the lack of morbidity, the method certainly shows brilliant results.

It is needless to add that if the operation is undertaken early, before the patient has lost much blood and before a number of vaginal examinations have been made the prognosis will be proportionately better.

In conclusion, we believe that Cæsarean section is of the very greatest value in all patients, at or near term with central placenta previa, and in primipare at or near term with partial placenta previa and no cervical dilatation.

## TWO AND ONE-HALF YEARS' EXPERIENCE WITH THE CONSERVATIVE TREATMENT OF ECLAMPSIA\*

By ROSS McPHERSON, M.D., F.A.C.S.

NEW YORK CITY

THE successful treatment of that form of obstetrical toxemia known as *eclampsia*, is a problem taxing to the utmost all the resources of the skilled practitioner, and in spite of the efforts of some of the profession to introduce less radical measures in the management of this serious complication, so unwilling are the majority of those dealing with the condition to change their methods to more conservative treatment that accouchement force, abdominal Cæsarean section, vaginal hysterotomy, etc., still continue to be the preferred and more spectacular means employed for the relief of the sufferer.

The writer, however, after carefully studying the mortality statistics both for mother and child in cases treated by the above-mentioned radical methods and after considering the good results obtained by the more conservative treatment, notably as expressed by the reports from the Rotunda Hospital in Dublin, began about two and one half years ago, and here let it be said with considerable skepticism, since he had been brought up to consider the two words, "eclampsia" and "operation" as synonymous, began, I repeat, to employ what may be called the *medical* treatment in the convulsive toxemias of pregnancy.

It is the purpose of this short paper to describe the results of this method, together with the technique employed, keeping in mind that this article deals with the treatment of an *acknowledged fact*, in other words, cases which *were in convulsions when first seen* and that therefore discussions as to etiology, prophylaxis, etc. have no place in this paper and will be omitted.

No one is more convinced than the writer, that careful prenatal treatment will eliminate the greater majority of these cases, and careful observation of the pregnant woman, with routine blood pressures, urine examinations, advice as to diet, clothing and ordinary hygiene will undoubtedly prevent the occurrence of the greater number of the cases which we now see.

There will always remain, however, a certain percentage of physicians who will neglect this prenatal care, either on account of their lack of appreciation of its importance, or on account of the failure of the patients to realize the gravity of the pregnant state, and therefore we shall, even under the most utopian conditions, expect to see a certain amount of this unfortunate complication.

\*Read at the Annual Meeting of the Medical Society of the State of New York, at Albany May 22 1918.

Under such circumstances we cannot simply sit with told hands and do nothing for the relief of the woman and yet the mortality statistics of the operative treatment of the convulsive toxemias certainly leave a great deal to be desired.

Quoting from an article read by the author before The American Association of Obstetricians and Gynecologists at their annual meeting in Newark in September, 1917, on this same subject:

"A thoughtful survey of the mortality statistics of patients suffering from eclampsia, taken from the reports of numerous writers, both here and abroad, will show that treated by radical methods, the maternal mortality approaches an average of from 25 per cent to 30 per cent, these figures being easily available, and that the fetal mortality averages from 40 per cent, surely a frightful complication, the etiology of which no one knows, a fact most constantly impressed upon me by reading the numerous dissertations of various authors on their experimental work. A striking contrast to these figures is seen in the report of the last 15,774 cases delivered at Sloane Maternity Hospital, where under reasonably conservative treatment, the maternal mortality was reduced to 14.5 per cent with a corresponding reduction in the still-birth rate. In the previous 2,000 deliveries at the same institution, the maternal mortality was 28.3 per cent, with a fetal mortality of 60.15 per cent."\*

These figures certainly indicate the need of some other method of treatment and the writer presents the following alternative, with the results in the hope that the members of the audience who are interested will give it a faithful trial, and will report their observations.

It is understood that all of the reported cases were pregnant or recently so, that they all had had one or more convulsions and represented true obstetrical convulsive toxemias.

Immediately on entrance to the hospital, the patient's blood pressure is taken, a catheterized specimen of urine secured, and she is put into an isolation room which is darkened and as much quiet as possible obtained. She is then given by hypodermic injection, one-half grain morphine sulphate, her stomach is washed out, two ounces of castor oil is poured down the tube at the end of the lavage, and she is given a colonic irrigation of five gallons of 5 per cent glucose solution.

If the blood pressure is over 175 systolic, phlebotomy is done, and a sufficient quantity of blood is extracted to bring the pressure down to 150, normal saline is not injected. In the experience of the writer it is unwise to bleed the patient if the pressure is lower than 175 systolic, as if, for any reason, a good deal of blood is lost during the delivery, the pressure will be reduced so low

that the patient may die from shock. The same objection applies to the antepartum administration of large doses of veratrum viride.

The patient is now kept quiet and one-fourth grain morphine administered every hour until the respirations drop to eight per minute. At this time convulsions have usually ceased, the patient will have fallen into labor, and, as has happened in practically all of our cases, will be delivered normally or by an easy low forceps in a short time. Occasionally, the use of a little ether is necessary to control the convulsions while waiting for the effect of the morphine. The convalescence is treated in the usual manner, as indicated by the symptoms and has been in our patients significantly uncomplicated.

The series now includes sixty-seven true convulsive toxemias. Of these sixty-seven, seven mothers died, showing a gross maternal mortality of 10.4 per cent. Two of these mothers, however, died before treatment of any sort could be administered, one arriving postpartum at the hospital and dying before anything could be done for her, the other dying of cerebral embolus while in apparently good condition and after having had but one convulsion. In these two cases no form of treatment whatever would have been successful, so that in a comparative estimate of methods of treatment, such as this paper purports to be, it is fair to exclude these two patients. This, then, leaves a corrected mortality of five mothers out of sixty-seven patients treated in the manner already outlined, or in other words, a mortality of approximately 7.4 per cent. The number of children still-born in the series was 28.5 per cent, which is a considerable reduction over the best figures quoted. Practically all of these were very premature or macerated and, as in the writer's first report, in no case which was at term and in which a fetal heart was heard on entrance, did morphine, although sometimes used in enormous quantities, seem to make any difference in regard to the viability of the child.

In conclusion, after watching with great care the effects of this treatment in the above cases, I feel that it will be a very real contribution to obstetrical progress, if with an open mind, the present radically inclined surgical obstetrician will turn his attention to the more conservative, and already well tested medical method outlined in this paper.

The writer has tried all the other recommended procedures in the past and can therefore compare the results from his own experience, and according to the present light, strongly favors the conservative treatment. Nothing but patient study and experiment will achieve real progress, and he who is not willing to admit the error of a method which shows through the unfailing accuracy of results, such an alarming mortality, will be apt to remain in the back-

\* *Craig, Amer Jour of Obst*, August, 1917, p. 212

ground of what we hope and believe will continue to be a well-defined progressive movement toward the saving of life on the lines suggested in this paper, namely the conservative, as opposed to the radical treatment of the convulsive toxemias of pregnancy

### DISCUSSION

DR E. GUSTAV ZINKE, Cincinnati. In speaking of the treatment of this disease, the practicing obstetricians of today may be divided into three classes. First, those who pursue a strictly medical care of the convulsions, and permitting the pregnancy to take care of itself, except in those instances in which the patient is already in labor, when they deliver, without delay, either by version or the use of the median or low forceps, second, those who immediately proceed to evacuate the uterus in every instance, no matter what the duration of pregnancy or stage of labor, either by abdominal or vaginal hysterotomy, or by rapid dilation of the cervix followed by version and immediate extraction of the child, third, those who do not confine themselves to either of the foregoing two methods, but who, after considering every phase of the case, calmly sit in judgment upon it, giving especial attention to the gravity of the symptoms, the period of gestation, the stage of labor, the patient's general condition and, what is of equal importance, the patient's immediate environments.

The practitioners of the first class, who will not admit of other than medical care, are as wrong as those of the second class who immediately proceed to the emptying of the uterus not excluding even a so-called accouchement force. There is but one difference between them—the former do much less harm than the latter, and, as a result of their extreme conservatism, obtain better end-results. The third class, the men who observe carefully all of the symptoms who take pains to diagnose clearly the character and gravity of every case, the patient's condition, and her surroundings, will resort either to temporizing medical means and, in connection with it to an early version of the child, or the forceps, for the purposes of terminating labor, or in cases where the life of the child is of great importance, or when it is impossible to give the patient the full benefit of intelligent medical treatment to vaginal hysterotomy if the eclampsia occurs within the eighth lunar month of gestation, or an abdominal Cesarean section if the disease comes on near or at the end of pregnancy.

Obstetric writers of extensive practical experience have for years spoken of three distinct clinical varieties of puerperal convulsions. The first variety is the so-called mild form which always terminates in recovery even when but little or nothing is done to check the progress

of the disease. In these cases the convulsions do not, ordinarily, occur at short intervals, and even if they do, the patient invariably awakens completely after each attack. Her mind becomes perfectly clear, the pulse remains good, the temperature does not rise, and the urine in the bladder, though small in amount, is not highly colored, contains only a small amount of albumen, and shows but few or no casts.

The second variety of cases includes those in which the attacks are at once more frequent and prolonged, yet consciousness slowly returns after every seizure, the patient complains but little, the pulse, though increased in frequency, continues good, and the temperature slowly, but gradually rises after every convulsion. The urine in the bladder, after the attack, is scant, dark and cloudy, contains albumen, and kidney casts. These patients usually recover under judicious medical care, surgical intervention does not improve the prognosis. Veratrum viride in fearless doses, high copious enemata, stomach-lavage, judicious hot-baths or hot-packs, gentle saline catharsis, and an absolute milk-diet are all that will be needed. It is true, recovery may be expected in this class of cases if a skillful surgeon quickly performs an abdominal or vaginal Cesarean section, but neither of these operations should be considered absolutely necessary, or even desirable. They mutilate the patient and do not offer any advantage over the treatment pertaining to the modern medical care of this disease. An adept obstetrician may rescue his patient just as readily, and with less injury, by a timely resort to the forceps or by a version upon the feet, followed by gentle extraction of the child provided the patient be in labor and the os dilatate at the time. If the patient is not in labor, veratrum viride, properly administered, in connection with the so-called elimination treatment and a strict milk diet will accomplish the best results.

In the third variety of puerperal convulsions, the issue is invariably fatal, no matter what the treatment medical, surgical, or both. From the beginning the convulsive seizures are so profound and prolonged as to leave the patient in a more or less comatose condition, consciousness does not return and the patient passes from one paroxysm into another until death draws the curtain upon the scene. Sometimes the unfortunate victim expires after the first or second attack, in other instances there is a repetition of the convulsions hourly or oftener. Every additional seizure deepens the coma and causes a marked rise in temperature and in pulse-frequency, until death ends the agony, usually, after twenty-four hours. These patients are doomed from the start. They are the cases which are caused by, or are associated with, acute yellow atrophy of the liver, cerebral hemorrhage or severe poisoning of the central nervous system. In all of them

the kidney-function is entirely suppressed, the bladder contains but a very small amount of thick dark-brown, highly albuminous urine, and numerous casts. Any surgical or obstetric operation, performed for the purpose of evacuating the uterus quickly, will be of as little avail in these cases as the use of large doses of veratrum viridi, or any of the other drugs favored in the treatment of this disease. Abdominal hysterotomy, however, may save the life of the child if it is performed very early. *This operation is justifiable only for this purpose.*

The interruption of gestation is justifiable in all cases of profound, persistent, and intractable puerperal toxemia, either by dilatation of the cervix during the first and second trimester of pregnancy, by vaginal hysterotomy during the early period of viability of the fetus, or by abdominal Cesarean section near, or at term.

The fact that in many instances the mother's condition improves when the membranes rupture, when the fetus dies in utero, or when the latter is prematurely expelled from the womb, has led the profession to believe that rupture of the membranes and a prompt removal of the uterine contents is the only reasonable and logical treatment of puerperal eclampsia. Hence the dictum *Empty the uterus in every case of puerperal convulsions as soon as possible, no matter what the period of gestation.* This doctrine is further supported by the fact, which no one can deny, that the pregnancy is responsible for the disease. Consequently every tyro in midwifery, many of our best surgeons, and even some good writers on, and honest teachers of, obstetrics, justify, recommend, and perform, without distinction of case or sting of conscience, formidable surgical operations in every case of puerperal eclampsia. Theoretically they are right, legally they are invulnerable, but practically they are wrong, and far from the well-traveled path of safety pursued in the past by many of our most competent, sagacious, and conscientious practitioners.

I believe that theory and practice should go together. It is a good rule. But we must not forget that every good rule has its exceptions. Experience has taught us that theory and practice do not work well together in the treatment of puerperal convulsions. If they did, how are we to explain the cases treated medically only, in which recovery takes place the pregnancy continues, and the patient delivers herself of a living child at the end of term? How may we explain the cases in which surgery, though resorted to early and skillfully, failed to save either mother or child? How shall we explain recovery from this disease after oft-repeated convulsions, when virtually nothing has been done for the patient's relief? What explanation can be given for the occurrence of fatal convulsions which attack the patient hours, or even days, after an otherwise perfectly normal labor?

I have answered, in part all of these questions, except the last, in the beginning of my remarks. If what I have said is not sound, let those who disagree with me present better reasons and clearer arguments than they have offered. Until they do this, no one has a right to maintain that a certain case died because it was not treated surgically, but simply medically, or vice versa. The fact remains that some patients die and some recover whether they are treated medically or surgically, or both. What we may say, however, is this. The fact that a case lives or dies under strictly surgical management is no reason at all why the same should not, or would not, have happened under absolute medical care, and vice versa.

In all of my dissertations on eclampsia of the past twenty years, I have held that surgery has contributed little or nothing to the reduction of the maternal mortality of puerperal eclampsia, and that intelligent medical care has given the best results. Strenuous efforts have been made to prove, statistically, that the mortality of the surgical care of puerperal convulsions is almost as low as that obtained when medical treatment alone is resorted to. The prestidigitation with which medical and surgical statistics have been manipulated has often surprised me. But even if it were true that the same gratifying results could be obtained by abdominal or vaginal Cesarean section as have been secured through the strictly medical care of puerperal eclampsia, the latter would still carry off the prize, because it excludes wounding, disfigurement, or maiming of the patient, while the medical treatment leaves no trace behind.

Now, gentlemen, these are my views on the subject. As to Cesarean section for placenta praevia, I have advocated that publicly since 1901 at every meeting I have attended, in journals as well as in my lectures.

Before I sit down, Mr. Chairman, something occurred here this morning, and I asked the Chairman to give me an opportunity to reply to a suggestion made by Dr. Marquise, of New York City. She referred to the care the State or the community at large should take of pregnant women, and especially those who are not able to raise their children properly because of financial straits. In other words, she (the doctor) suggested that we should make these mothers and children dependents upon the community. I wish to object to this. We have too many dependents now, what we want is more independence, and in our efforts to change conditions for the better we should begin at the cradle, and not after having obtained manhood and womanhood. Let it be taught universally to the boy that his highest ambition should be to become a husband, a father, the king of a home, to every girl that her highest ambition should be

to become a wife, a mother, the queen of a home and tell the girls not to look for wealth, not to marry a loafer or a drunkard to improve him, but to select a man whose heart is filled with ambition's fire, who makes his mark in the start and moves it higher and higher, who believes it better to die in the strife, hands with labor rife, than to glide with the stream in an idle dream and spend a purposeless life

DR GEORGE L. BRODHEAD, New York City First, I would like to congratulate Dr McPherson on his splendid figures of approximately 74 per cent mortality. I have tried treating two patients by Dr McPherson's method and neither patient has gone into labor. I would like to ask Dr McPherson if labor does not begin what he would do? I think it is borne out by statistics that in the morphine treatment the uterus will be emptied within a few weeks or a month after treatment has been instituted, and if this is so and I think Dr McPherson will bear me out, why should we not induce labor spontaneously at this time? Why isn't it better to put in a bougie or bag and empty the uterus a little more promptly, which I think is to the patient's advantage. I want to ask Dr McPherson if it isn't true that the majority of his patients were in labor and how many of his patients were six and seven months pregnant? He stated that no baby whose fetal heart was heard on entrance to the hospital was born dead. I wonder if he could tell us the fetal mortality within the first ten days after birth for I think that would be exceedingly interesting?

Dr McPherson says he doesn't know what type of preclampsia would demand a Cesarean section. I should say that a patient at or near term, with a long cervix and an intense toxemia, evidenced by visual disturbances, oedema, high blood pressure, scanty urine, epigastric distress, etc., would be the ideal case in which to perform section.

DR ROSS MCPHERSON New York City The section is to be congratulated on hearing such a discussion as Dr Zinke's, one that has been so thoroughly worked out as his, and one with which I entirely agree.

There seems to be an opinion prevailing here this afternoon, at least I so take it that I don't know how or I am afraid to do a Cesarean section. I have done over one hundred sections have lost only one mother and several were for eclampsia. I ought to be highly enthusiastic about the operation, but I am absolutely obsessed—this will make Dr Brodhead laugh—with the fact that the average obstetrician of the present day has forgotten how to do much of anything but a Cesarean section for all forms of obstetrical complication. The Cesarean section is becoming the absolute panacea for every obstetrical

ill. That is what it amounts to, and it is done because we can get away with it. There are many cases in which I will do a Cesarean section, but I doubt if I ever do one again, simply because the patient has eclampsia. My figures are open to inspection. I don't for one minute believe that there is any method in obstetrics that applies to all cases alike, and I do thoroughly agree with my good friend Dr Zinke that you have got to take every case and analyze it, and apply the method which seems best in your judgment at the time the case comes under your hands.

Answering Dr Brodhead's question, there hasn't been a case under seven months. Thank you.

## OBSERVATION ON FIBROID TUMORS OF THE UTERUS\*

### A CLINICAL EXPERIENCE OF 529 OPERATIVE CASES

By EDWARD J. ILL, MD, FACS

NEWARK, N. J.

**A** PERUSAL of one's records from time to time for such information as they may contain, leads to a better understanding of the work done. Not only this, it is conducive to improvement in the work of the future. I often wonder whether I am under an impression or am I speaking of the facts as would be borne out by my records?

Am I on the right tack or will I have to shift my sail? Unless we do this, we are in as bad a shape as the banker or merchant who fails to draw a balance sheet.

Thus I am giving you the result of my work for the past twenty-two years on fibroid tumors of the uterus, not in the shape of statistics, but in the shape of experience borne out by numbers. My records before twenty-two years ago were lost. Some of the work represents early experiences with such operations.

Those who have taken up surgery since that time know little of the difficulties encountered in fibroid tumor operations and the great mortality at or before twenty-two years ago. The records have been made up by my many assistants and hospital interns, during that time, as dictated by myself, or else they were written by me personally. It has taken many weeks to tabulate them and prepare them for study. I can vouch for the truthfulness of the reports and the records so far as such records made by many persons can be truthful. In looking over the records I was impressed with the fact that but a small proportion of all the cases presented symptoms which made the operation a life saving operation. The septic cases, the hemorrhagic cases and the obstructive cases might be so classi-

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 21, 1918.

fied There were 529<sup>\*</sup> operations for fibromyomata done by myself during the time covered by this study This represents only a small proportion of all the cases recorded in my office case books during this time The ease with which fibroids are operated on at this day makes one an easy prey to operate on cases that present only minor symptoms A distinct indication for every operative procedure should precede the work proper We may err in our diagnosis or in our judgment as to the nature of the operation We may err in the prognosis, but we must not err in the indication calling for surgical intervention, otherwise we prove ourselves unfit for our calling He who has an eye to his future usefulness, or, if one likes to put it less altruistically and more egotistically, to his future gain, let him look to the permanent welfare of his patient rather than to his own present personal gain

Let us remember again that death resulting from fibroid directly is extremely rare In St Bartholomew's, of 547 cases, twenty-nine died, all but one after operation To understand this fully it will be proper to speak of fibroids in women in general Let us understand that they are the product of later years The vast majority occur in women over thirty-five years of age

In the cases operated on by my colleagues, assistants and myself 78.5 per cent were above this age

TABLE I

*Ages at Which Operative Cases Were Treated*

Age	No
20-25	10
25-30	43
30-35	118
35-40	178
40-45	212
45-50	148
50-55	65
55-60	15
60-65	1
65-70	2
70-75	1
75-80	—
80	1
	<hr/> 794

The frequency of fibroids in general is an important question and bears particularly on the relatively few cases that present subjective or objective symptoms and thus come to relief

To get a definite understanding one must be guided by autopsy records and not by clinical diagnosis Unfortunately autopsy figures are obtained with difficulty

\* During the same time there was recorded 7,455 gynecological operations done by me personally, the fibroid operation being about 7 per cent of all operations

A cursory perusal of the literature shows that Nonat,<sup>1</sup> citing Baylis, considers that 20 per cent of all women over 35 have fibroids His observations at the Saltpetriere gave a similar result, but leaves in doubt whether these were clinical or autopsy records In clinical they would agree with Marion Sims' report and with Kelly and Cullen Kelly and Cullen show 20 per cent of all autopsies present fibroids, 33.7 per cent were colored and 10 per cent whites The whites and blacks were, however, not reported as to ages Still one can make out that most cases occur between 40 and 50 years

Leudet<sup>2</sup> of the Hotel Dieu made autopsies on 77 women and found fibroids in 10 cases, or 14 per cent Ages are not stated

Klob,<sup>3</sup> the renowned assistant of Rokitsky, believes that 40 per cent of all women after the age of 50 have fibroids

Winkel<sup>4</sup> states that 12 per cent of 575 general autopsies at ages above 35 present fibroids, while in 135 autopsies under 35 years there were 5 per cent These figures belong to the most reliable

Eden and Lockyer<sup>5</sup> gave the figures at from 20 per cent to 25 per cent in all adult women

Veit<sup>6</sup> puts the figures at from 12 to 20 per cent of all women over 35 years

Through the kindness of Mr F F Dryden, President of the Prudential Insurance Company and Mr Frederick L Hoffman, the learned statistician of the Prudential Insurance Company, I have the privilege of presenting the result of the latter's work, especially made out for this paper, in regard to the Massachusetts General Hospital There were 127 complete autopsies to report on, showing that 33.1 per cent of forty-two cases presented uterine fibroids Before 50 years 22.9 per cent had fibroids and over 50 years 45.6 per cent presented these uterine tumors

Mr Hoffman<sup>†</sup> also reports to me an analysis of the records of Johns Hopkins Hospital The analysis includes 424 autopsies

They were not conclusive cases, but only those in which the cervix and corpus were examined

Mr Hoffman says in his report to me that "It is not the practice at Johns Hopkins Hospital to make a complete autopsy of the entire body in all cases The data available can therefore not be relied upon as entirely representative, but in a general way as indicative

"A disturbing factor also is that the preponderance of autopsies are in persons under 50 years Another factor is that a number of women already have had their pelvic organs removed before the disease that occasioned their death took place"

† A copy of all the autopsy records of both institutions are kept on file by the Prudential Insurance Company

TABLE II

MASSACHUSETTS GENERAL HOSPITAL AUTOPSY RECORDS				PROPORTION OF UTERINE TUMORS DISCLOSED AT AUTOPSY					
Age	Autopsies	Non Malignant Tumors		Mixed Malignant Tumors		Malignant Tumors		Totals	
		No	%	No	%	No	%	No	%
20-29	22	1	4.5					1	4.5
30-39	28	8	28.6			3		7	35.0
40-49	20	7	35.0					7	35.0
50-59	26	13	50.0			2	7.7	15	57.7
60-69	24	10	41.7	2(?)	8.3	1	4.2	13	54.2
70-79	6	3	50.0					3	50.0
80 over	1								
Total	127	42	33.1	2	1.6	6	4.7	50	39.4
20-49	70	16	22.9			3	4.3	19	27.2
50 over	57	26	45.6	2	3.5	3	5.3	31	54.4

Seven of the malignant tumors were carcinomas and one an hydatidiform mole.

TABLE III

AUTOPSY RECORDS OF THE JOHNS HOPKINS HOSPITAL BENIGN AND MALIGNANT TUMORS  
*White and Colored Patients Combined*

Ages	Autopsies	Benign Tumors		Malignant Tumors		No	Total	%
		No	%	No	%			
20-29	109	16	14.7	4*	3.7	20		18.4
30-39	113	45	39.8	4**	3.5	49		43.3
40-49	110	39	35.4	8***	7.3	47		42.7
50-59	60	26	43.3	8****	13.3	34		56.6
60-69	25	10	40.0	4*****	16.0	14		56.0
70+	7	3	42.9			3		42.9
Under 50	332	100	30.1	16	4.8	116		34.9
50+	92	39	42.4	12	13.0	51		55.4
All ages	424	139	32.8	28	6.6	167		39.4

\* 1 sarcoma with myoma, 1 carcinoma with polyp 2 carcinomas

\*\* 4 carcinomas

\*\*\* 1 adeno carcinoma 2 sarcomas 5 carcinomas

\*\*\*\* 1 adeno carcinoma 2 sarcomas 5 carcinomas

\*\*\*\*\* 1 myoma carcinoma 3 carcinomas

#### White Patients Only

20-29	45	3	6.7	1	2.2	4	8.9
30-39	60	15	25.0	1	1.7	16	26.7
40-49	60	15	25.0	3	5.0	18	30.0
50-59	37	12	32.4	7	18.9	19	51.3
60-69	18	4	22.2	4	22.2	8	44.4
70+	5	2	40.0			2	40.0
Under 50	165	33	20.0	5	3.0	38	23.0
50+	60	18	30.0	11	18.3	29	48.3
All ages	225	51	22.7	16	7.1	67	29.8

#### Colored Patients Only

20-29	41	11	26.8	3	7.3	14	34.1
30-39	52	30	57.7	3	5.8	33	63.5
40-49	49	24	49.0	5	10.2	29	59.2
50-59	23	14	60.9	1	4.3	15	65.2
60-69	7	6	85.7			6	85.7
70+	2	1	50.0			1	50.0
Under 50	142	65	45.8	11	7.7	76	53.5
50+	32	21	65.6	1	3.2	22	68.8
All ages	174	86	49.4	12	6.9	98	56.3

Out of the 424 autopsies, colored and white, it is shown that 32.8 per cent had benign tumors of the uterus. Under 50 years there were 30.1 per cent, and above 50 years 42.4 per cent.

There were 225 autopsies on whites and 22.7 per cent were thus affected. At the ages under fifty 20 per cent had fibroids against 30 per cent over 50 years.

In the colored 49.4 per cent of all had fibroids while under 50 45.8 per cent, and above 50 years 65.6 per cent were thus afflicted.

If we, therefore, accept the reports (and they are the most trustworthy thus far reported in

our own country) of these two institutions as a general truth for the white American people, we find that 27.9 per cent of all women have fibroids. If we make a practical application of this it would show that of the 4,529,017 women in New York State 1,275,481 are above 35 years and of these at least 439,550 would have fibroid tumors. Now it is very evident to you that no such number present themselves for medical advice for the simple reason that they do not present symptoms. This means that the vast majority have uncomplicated tumors.

It has been suggested that every woman be

examined once in a year. It seems to me it would be a calamity for the women if they got into the hands of the "would-be surgeon." Some eighteen years ago I was asked to read a paper before the Buffalo Academy of Medicine on "The Indication for the Removal of Fibroid Tumors of the Uterus." There had already been formulated, in my own mind, certain definite ideas which had guided my work during the previous twenty years.

These experiences were to direct my future course and nothing should change my views except what personal experience would teach. As I look over that paper now, written so long ago, there is really nothing to add except what bedside experience has taught me and which it will be my pleasure to present to you.

The deductions reported to you are made from 529 operative cases with such occasional remarks as long observations on non-operative cases prompted.

The presence of a fibroid tumor, the diagnosis being certain, is rarely an indication for operation. It may be, however, that by its size it is the cause of comment among gossiping neighbors. It may be that the patient's mental condition is such that she becomes mentally depressed from the knowledge of the presence of a growth. Both of this kind of patients should be relieved. For the former indication I have operated twice on maiden ladies and for the latter on twenty cases.

A doubtful diagnosis should always be cleared up by whatever means we have at our disposal.

Thus, a tumor in the right broad ligament misled me into the probable diagnosis of an unruptured ectopic pregnancy.

At another time an exploration only cleared up a case where the diagnosis lay between an ovarian tumor and a fibroid.

At times we feel it our duty to remove a fibroid uterus while operating for other conditions, though the fibroids have not been diagnosed.

Thus, fibroids presented themselves in twenty-seven cases of neoplasms of the ovary and the fibroids were dealt with as the indication warranted.

Rapidly growing tumors should be removed. This diagnosis can be made only when careful and repeated measurements are taken. This indication was the cause of operations in fifteen cases or in a little over  $2\frac{1}{2}$  per cent of all cases.

Sometimes these cases were observed for years, measurements being taken every six months until suddenly some sudden change in the tumor caused a rapid growth. The fear of a possible malignant degeneration was ever in my mind. Usually it was due to some circulatory disturbance producing an edema, a cystic or a red or brown degeneration.

No malignancy was ever observed as a result of sudden increase in size. The frequent assertion that fibroids of the uterus often undergo malignant degeneration has always prompted a speedy removal whenever the tumor has taken on rapid growth. Possible future malignant degeneration of the tumor should never constitute an indication for operation when that is the only indication.

In my personal observation, I have never seen a malignant degeneration of a fibroid. It undoubtedly occurs, for I have seen it in a case that a friend demonstrated. Besides, it occurs on good and unquestioned authority. It must be exceedingly rare. If we had overlooked a sarcoma in 785 cases operated on by Dr. Chas. L. Ill, myself and our assistants, we certainly have never seen a recurrence. Only a recurrence or secondary deposits would prove to me the malignancy of the disease. Nor has it occurred in over 2,000 cases recorded in my office case books. Many of these cases have been seen for years recording their sizes by actual measurements.

Thus, also, in Mr. Hoffman's report of the Massachusetts General Hospital and Johns Hopkins Hospital, no definite report is made of any fibroids having become malignant. The nearest we can come to it is in the report of Johns Hopkins Hospital, where it is spoken of as a sarcoma with myoma.

I myself have seen a sarcoma develop in a uterus where there was a fibroid, but not in the fibroid itself. Even this particular case never had a recurrence and I am reporting the case on the responsibility of the pathologist.

A combination of fibroids and cancer is rather frequent.

Carcinoma of the body of the uterus is rather frequently accompanied by fibroids, but then we must remember that one in every five women have fibroids anyway and many more than that in women above 50 years in whom carcinoma of the body most frequently occurs. You will understand my position after reciting these figures, that for me, at least, there is no evidence that fibroids often enough undergo malignancy to recommend the removal of every tumor we diagnose.

Suppose malignant degeneration of fibroids occur in 1 per cent of all cases operated on (I am not saying in 1 per cent of all women who have fibroids), I would have killed by my operations twenty-one women to save a possible six.

A continued perusal of my records show that the most frequent indication for interference is pain. It is recorded thus in 192 cases, or about 36 per cent while hemorrhage is recorded in 187 cases or 35 per cent.

Now hemorrhage is a questionable factor. What one considers a hemorrhage another

would not. Personally I should say that if a woman has always soiled twelve or fifteen napkins and lost no clots, that certainly would not constitute a hemorrhage. But if she was accustomed to soil six or eight and now soils twelve or fifteen and when she passes some clots, which she did not do before, I should begin to be suspicious. When however, this flow has gradually increased to this extent, and in spite of rest and drugs continue to increase, then I have recorded hemorrhages as an indication. I was well aware what was in store for the future. In other words, I was going to do an operation to prevent future mischief and so tell my patient.

A very different aspect is presented by the case where there is a great lowering of the percentage of hemoglobins and the number of red blood corpuscles, when there are heart murmurs, or where the patient has reached the stage of an hunger, with them the indication is imperative and all procrastinations should be refused. All conditions between these two extremes are permissible to argue for delay. Age will be an important consideration. Let us remember, however, that bleeding fibroids postpone the menopause.

A combination of pain and hemorrhage is found to be the indication in seventy-one cases or 13 per cent.

It is very apparent that patients will demand relief from pain, incapacity and discomfort long before they ask for relief from hemorrhage.

We all know and regret that patients with cancer of the uterus do not look for relief because of bleeding, since pain is not an early symptom.

I might have included pelvic incarceration among the painful cases. Of such there were fourteen cases, or  $2\frac{1}{2}$  per cent. The only symptoms, however, that brought the patient was inability to pass the urine. Backache, however, had long been a symptom with these patients. No cutting operation was advised if the uterus could be pushed out of the pelvis and the patient relieved. Once an incarcerated pregnant uterus with a fibroid in it was relieved by abdominal section and the pregnancy continued.

A most serious and pressing indication was for those showing symptoms of sepsis thirty-five cases. These cases might be classified under three heads. First, where the sepsis originates in the tumor, twenty-three cases, second, in those cases where there was acute adnexa disease with pus, ten cases and lastly those which followed an abortion, one case.

There can be no question about the pressing indication of the septic tumor.

The indication for septic adnexa disease is debatable.

In latter years I have refused operations until the septic process had abated and lost none by my conservative method. In former years those with septic adnexa disease presented a death rate of two in ten cases, or 20 per cent. This bears out the observation of so many operators that in acute adnexa disease operation should be postponed.

There was also a case of peritonitis, the causative factor of which could not be elicited.

There is a record of three operations following abortion where the uterus could not be cleaned out and flow and pain did not abate. I did not have the courage to await febrile action, but operated as a preventative measure.

Lastly, I wish to speak of the cause of sterility as an indication for operation. Myomectomy was done twice with this indication in mind and both times the result was all that could be desired. To operate for sterility is a high aim and should never be undertaken, except for single tumors. Any woman has a perfect right to risk her life where there is a possibility to a happiness which she wishes to obtain.

Twice I have removed fibroids in the pregnant uterus without interrupting gestation. This reminds me of saying a few words of the coincidence of fibroids and pregnancy. Please remember, I say coincidence. Pregnancy and an ovarian tumor is a complication that must be met, but not so are fibroids.

Dystochia due to fibroids has been the cause of but one operation in my work. A fibroid tumor in my experience has never called for the induction of an abortion, nor can I see such an indication. In fact, I would consider it an extremely dangerous procedure—much more dangerous than a supra vaginal amputation.

I do not see many pregnant women but in the last year I have seen six pregnancies with fibroids in my office and not one reported any difficulty.

If the tumor has developed in the cervix, obstruction to the passage of the fetus is likely, otherwise the tumors are retracted with the lower segment of the uterus and no evil results.

When we speak of complications it is likely that the complication is the cause of symptoms in fibroids, and thus form an indication for operation. Nevertheless there are conditions which form serious complications to our operation.

We must consider as such systemic diseases as diabetes (one case) and circulatory diseases in the shape of valvular disease of the heart (three cases).

Then there is an unexpected discovery of

pelvic or peritoneal tuberculosis, of which I report one case

The frequency of adnexa disease should not be lost sight of. Of these there were eighty-seven cases. I also report twenty-eight ovarian neoplasms, of which one was cancerous, and another an ovarian fibroma.

An unexpected carcinoma of the corpus was noted in one case, and sarcoma in the other. Complications of a serious, though by no means insuperable nature, are those of intraligamentous development of the tumors (eleven cases). Then we have those of low development in the uterus or cervix (eleven cases), and lastly those in incarcerated retroflexed uteri (twenty-two cases). The seriousness consists in the difficult technique of the operative work. Ectopic pregnancies are recorded three times and ordinary pregnancies three times. In one of these cases a pregnancy was not suspected, and the ovum only found when the specimen was examined. It is rather astonishing that ectopic pregnancies are not recorded more frequently as a complication. They likely would be if the original diagnosis was an ectopic pregnancy and not a fibroid. Extensive peritoneal and intestinal adhesions were present in eleven cases. No matter what the complication was, if the operation offered a chance against none, it was advised.

I do not remember ever refusing such an operation.

Among all the operations there were fourteen cases operated on after the cessation of menstruation. Five were incidentally removed because of ovarian tumors, two were hemorrhagic because the tumor gradually invaded the cavity. One of these was eighty-four years old.

Two pelvic incarcerations producing dysuria in one case, and obstruction of the bowel in the other.

One was removed because it was in the way for a Watkins operation.

One because the tumor produced a copious serous discharge.

Two were sloughing tumors, and one produced a sudden change in the circulation causing a cystic degeneration and rapid increase in size.

The character of the operations performed in these twenty-two years reflects on the whole history of operations on fibroids.

Thus in six cases the rubber ligature, supravaginal amputation and fixation of the stump in the abdominal wound were used. The rubber ligature used under long pins had followed Koeberlé wire sling. It was the great operation of the beginning of this surgical era. Then came the vaginal total extirpation, at first with clamps and later with ligatures. Of these there were sixty-two cases.

Operations were done by the vaginal route on as large tumors as reached the naval. Morcellation was accomplished by long knives and powerful scissors. This operation led the way for vaginal myomectomy, of which I had twelve cases.

Today vaginal extirpation should not be done if the uterus cannot be pushed into the pelvis and the cervix to the vulva. Even then it is not always an easy operation, but often less bloody than from above.

Abdominal supravaginal amputation will be the choice in most cases today. This was performed in 331 cases. It has been said that leaving the cervix subjects the patient to cancer of that organ. In nearly 800 operations in our combined service I have seen it but once.

Abdominal total extirpation was done fourteen times. I am not very fond of this operation, though I have never lost a case.

Abdominal myomectomy was done in forty-nine cases. It should be done on single tumors only, or in the very young where pregnancy is hoped for. Mutilated uteri, after the removal of many tumors, should not be left in.

Besides these forty-nine cases I did thirteen myomectomies and the Gilliam operation on the same case. All myomectomies have recovered. I have purposely omitted other operations from my paper combined with fibroids, like the Watkins plastic operations on perineum, herniotomies, etc., as irrelevant.

Hegar's operation was done three times, it is an almost forgotten operation and consists of removal of the ovaries only, thus producing an artificial menopause. All three cases recovered and remained well. I believe any other operation would have killed these women. They were in such a bad physical condition.

Curettage was done thirteen times. It is an operation fraught with danger, unsatisfactory in its ultimate outcome and should be rarely resorted to.

A combined abdominal and vaginal total extirpation was done four times where malignancy was suspected.

In two cases the tumor was not removable, though the later one returned after six futile attempts had been made by others and the large mass reaching too near the naval was removed by the vagina.

The treatment received by the ovaries should be touched on.

They are important organs and should not be removed unless diseased. One ovary was retained in ninety-eight cases, both ovaries were retained in 283 cases and both ovaries removed in 126 cases. In twenty-two cases no mention was made of what happened to the organs. You can see that I have made special efforts to retain one or both ovaries, the per-

centage being over 72 per cent. The menopause symptoms are worse in women who have lost both ovaries. This is especially so in the young women, but even the old suffer much. In a lady of 55 years I removed both ovaries and uterus, and now at 75 years she still suffers from vaso motor disturbances. Now and then it seems important that mensturation should be continued for psychical reasons where we are called upon to do a supra-vaginal amputation. This can often be accomplished by amputation above the os internum. If we avoid removing all of the body of the uterus, we may retain this function much to the delight of many of our patients. What was it first an accident can now be purposely accomplished. Of course, one must be absolutely sure that no small myoma exists in the part left, and that at least one ovary is retained. While I have never seen one grow and necessitate further operation it seems to me likely that it would.

Lastly, the number and causes of death should be studied with the object in view of correcting any fault and looking to better results.

He who operates on every fibroid that presents itself will have a high percentage rate of recoveries. On the contrary, he who operates on cases only that call for urgent surgery will select bad cases and his death rate will be correspondingly high. He will have to operate on septic, diabetic and albuminuria cases, those with heart lesions and those very anemic cases that hardly have any recuperating power left.

A low percentage of hemoglobin is not necessarily fatal. One patient with 15 per cent was raised by transfusion to 25 per cent, operated on, and promptly recovered. Fat women do not present good surgical risks. I have lost none with heart lesions, whether organic or functional. Indeed, I would consider such an added indication, since we well know how fibroids often affect the heart muscles.

In the first 100 cases there were seven deaths. In the later years I have gone on for 102 successive cases without a death, and twice no deaths, in sixty-nine consecutive cases.

It is rather remarkable that in sixty-eight cases operated on in private houses there were no deaths. I attributed it simply to a lucky circumstance.

There were twenty-three deaths in all or 4.1-10 per cent. Twenty-two occurred from supra-vaginal amputation, and one from a combined abdominal and vaginal extirpation. Sepsis was the cause in thirteen cases, obstruction of the bowel in one case, shock and hemorrhage in two cases, heart embolism, diabetic coma in one case each. No reaction in the wound thus a reopening in two weeks and

protrusion of the bowel occurred in one case and secondary hemorrhage and sepsis in two cases. In two cases the cause of death was not noted. Operative or post operative accidents have been few. Twice the bladder was wounded. I have never known that the ureter has been ligated or wounded. The urine was examined in every case directly after the operation. A hernia has occurred to my knowledge once. Post operative phlebitis of the leg is recorded once.

My paper is already too long and still there seems so much more to say than I have said.

If the paper has given you only a tithe of the pleasure it gave me to write it and the satisfaction I have had in looking over the histories of my fibroid cases for so many years, I am well repaid.

#### REFERENCES

- 1 Nonat. Practical Treatise on Diseases of the Uterus, 1860
- 2 Paul Broca. Treatise on Tumors, October, 1869
- 3 Klob. Pathological Anatomy of the Female Genital Organs, 1864
- 4 Winkel. Gynecologie, 1890
- 5 Eden and Lockyer, 1916
- 6 Veit. Handbuch der Gynecologie

#### Discussion

DR GEORGE B. BROAD, Syracuse. I doubt if you will ever hear a clearer and fairer presentation of any one man's work. Dr. Ill stands for conservatism in pelvic surgery. Dr. Ill did not touch on the X-ray and the use he makes of it. I wonder what his position is in that regard. I didn't catch that he has had very serious post operative complications because he left the ovaries.

I have a lot of figures I will not give to you, and still when you do read of a large compilation of two or three thousand cases and they give you in the aggregate malignancies in four and upwards per cent, it makes you feel as though perhaps it were not always right to be conservative. In looking over my own work for this discussion I have selected my last hundred cases of uterine fibroid. Histories are complete in this last hundred.

I am very apt, unless there is some imperative reason, to disguise the situation from the patient. I do use the X-ray somewhat, and if there is no reason why I need to hurry the operation I ask the patient whether she is willing to have a preliminary treatment. If she is perfectly willing I then let it go for a while. I have six cases of this series where the X-ray did no good and have operated upon three of the patients subsequently.

DR. MARION CRUG POTTER, Rochester. In women over thirty years of age fibroids of the uterus are certainly very common. In 35 years

of gynecological practice I have never seen a case become malignant. During the last three years I have been very much interested in the X-ray treatment of fibroids. I have had twelve cases that were flowing severely but absolutely refused to have operative treatment. Two of the cases had radium used successfully. These cases were about forty-seven years of age and the uterus in several of the women was as large as four months pregnancy. In the first case the woman had never missed a period. After two treatments she missed a period and six treatments brought on a complete menopause and cured her. All were successful in bringing about the menopause after three to six treatments, with the exception of one case, thirty-two years of age, and I was pleased that six treatments did not apparently influence her periods.

It seemed as though its use could be too easily abused if sterility from X-ray treatments could be so easily accomplished in young women.

DR E. GUSTAV ZINKE, Cincinnati. Dr Ill is always interesting and what he says is deserving of consideration. The question of the treatment of tumors of the uterus is much more complex to-day than it was in the recent past. I still belong to the old school. I believe that a woman, the victim of a uterine fibroid, which gives her no trouble at all, but is of sufficient size to be recognized upon examination, should accept operative attention. Still, I am in no position to adversely criticize the X-ray treatment of these cases. What I do know is, that a good many cases have been reported as cured. I have not seen one of them. I have seen women, scared to death, when an operation was proposed, and have advised the X-ray treatment in these cases. However, I have yet to see a single instance in which the fibroid disappeared. Some of these cases have not returned to me, but from the subsequent history I have been able to obtain from members of the family, the patients are not as well as they would wish, although they do not admit of being worse. I have discovered many unsuspected fibroid tumors of the uterus when operating for other conditions. I remember one case in which pregnancy was diagnosed and which proved to be a case of soft fibroid tumor complicated with pus tubes.

DR EDWARD J. ILL, Newark, N. J. I have had no experience with the X-ray nor radium. I notice, however, that from the quarters where we were told some years ago that all fibroids must be removed, because they are apt to undergo malignancy, we are now told that radium will cause an absorption or at least a cessation of all symptoms. There appeared in the last *Journal* of our New Jersey Medical Society an encouraging report of 212 cases treated by radium, all cured except eight that had to be operated on.

## SOME CAUSES OF STILL BIRTH.\*

By J. CLIFTON EDGAR, M.D.,

NEW YORK CITY

SOME confusion exists regarding the definition of "still birth." Most authorities consider that "still born" and "dead born" are identical, which appears to us the simplest plan and is almost universally adopted.

The term "still birth" is here applied only to viable fetuses, namely, from twenty-eight weeks of pregnancy to term, in which respiration is not established, whether heart action persists or not. The term "abortion" includes all non-viable fetuses, namely, during the first twenty-seven weeks of pregnancy. The "Certificate of a Still Birth" of the Department of Health of the City of New York, reads:

"The death of an infant that has breathed, must not be reported as a still birth, such cases must be reported by filing a certificate of birth and a certificate of death. Hence the Department of Health supplies a separate 'Certificate of a Still Birth'."

Ideal obstetrics strive to have every child delivered and unharmed. Statistics show that over 4 per cent of children die during birth. Schultze in 1877 estimated that 5 per cent of children are still born, while 15 per cent die very shortly after birth, the result of the trauma of labor. At the Munich Frauenklinik, the ratio of still births was 52 per cent. In 10,000 births at the Sloane Hospital for Women, March 12, 1909, to October 30th, 1913, there were 449 still births, or 4.4 per cent.

The percentage of still births in the United States (average still births mortality 3.4 per cent) and the number of deaths of infants in the first month following labor have shown no decrease in recent years. Indeed there has been a slight increase in the latter.

During the year 1917 there were 141,564 living births in the City of New York, and 6,120 still births were reported to the Department of Health, although the actual number of the latter must have been very much higher. This is a still birth mortality of 4.1 per cent.

Of 14,468 births at the Manhattan Maternity from April, 1905, to October 1, 1916, there were 519 still births, or 3.6 per cent. The total number of indoor or hospital confinements was 4,708, with 281 still births (5.9 per cent), of outdoor or home confinements 9,760, with 238 still births, or 2.5 per cent.

The object of the present paper is an inquiry into the immediate causes of these 519 still births at the Manhattan Maternity Hospital, with the possibility in view of lessening this source of infant mortality. It was thought advisable to take the last 500 cases for convenience of treat-

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 22, 1918.

ment of the subject, which leaves the number of indoor or hospital still births 272, outdoor or home still births 228. These series will be considered jointly and separately.

We are to determine first, whenever possible the causes of death, and any contributory or doubtful influence sufficient in itself to cause death. We then note the condition of the pelvis and the presentations which add to the risk of child birth. We regard macerated and premature fetuses as conditions and not causal factors. Next in order come the various operative procedures, and the autopsy findings. Finally, an attempt will be made to determine the number of still born children in which the risk was not so great as to preclude the survival of the child had the mother been seen during pregnancy and her confinement properly managed.

(The chief categories of the causes of our 500 still births are as follows)

#### CAUSES OF STILL BIRTHS

Unknown	149
Obstructed labor—maternal and fetal	
dystocia	78
Protracted labor	32
Precipitate labor	10
<i>Cord Conditions</i>	
Prolapse	46
Cord tight about neck	8
Compression of cord	5
Rupture	4
Knots	2
<i>Placental Conditions</i>	
Previa	30
Separation	16
Miscellaneous	1
<i>Maternal Diseases</i>	
Eclampsia	24
Toxemia	19
Miscellaneous	1
<i>Fetal Conditions</i>	
Syphilis	19
Monstrosities	18
Hydrocephalus	9
Miscellaneous	19
Unstated	10
<b>Total</b>	<b>500</b>

In reference to the causes classed as "Unknown" it is not to be inferred that there was no suspicion of the causes of still birth. Of these 149 cases, 90 are simply recorded as "macerations," while 19 others were prematures, which were also macerated and 19 simply prematures (109 macerations in all and three prematures in all). These conditions will be discussed elsewhere. There remain but 21 other cases,

in which the child (in five cases a second twin) was still born, although the mother was normal and labor easy.

In regard to the second category of *Obstructed and Protracted Labors*, it was thought best to attribute still birth to dystocia or defective expulsion, and not simply to the character of the pelvis or presentation, although in many cases the latter were clearly responsible.

There were 78 cases attributed to dystocia, maternal, fetal or both, divided as follows:

Unknown cause	19
Pelvis insufficiency	20
Malpresentation	28
Large child	4
Pelvis small, malpresentation	4
Pelvis small, fetus large	2
Cancer of uterus and vagina	1
	<b>78</b>

The "Unknown" cases are known only through the nature of the operations and manoeuvres necessitated, which suggest a high degree of obstruction. Just why the nature of the dystocia is not stated, we are unable to answer.

Of the 32 cases attributed to *prolongation of labor* aside from the bare information that labor was in progress for several days, a considerable number were examples of delay or neglect. Here also belong a certain number of dry labors from early rupture of membranes in primiparae. It is possible even probable, that the great majority of these could have been saved by proper care before or during labor.

*Cord conditions* as causes of death comprise 67 cases, including 46 examples of prolapse, which is usually given as uncomplicated, i. e., other factors are not stated. The cord was wound tightly about the neck of eight cases, compressed (by pelvis three times and by forceps twice) in five cases, ruptured in four cases and knotted in two. Short cord when present, will be mentioned under doubtful causes.

*Placental conditions* as causes of death, comprise 30 cases of placenta previa of various kinds and 16 cases of premature detachment of placenta, including accidental hemorrhage. There was one case of placental fibrosis.

*Maternal causes* are readily summed up, as 24 cases of eclampsia and 19 of toxemia. Syphilis in the mother is recorded under syphilis in the fetus and is doubtless far more common than the figures indicate. The death of one child was ascribed to sudden death of mother, from a pulmonary embolus.

*The fetal conditions* are very difficult to compute. Some statisticians would include prematurity proved and probable asphyxia, probable syphilis etc. which would considerably alter the make-up of our statistics. But prematurity is

best regarded as a condition frequently encountered in still birth, not as a necessary cause of death. Asphyxia is simply a mode of death, rather than a cause, for, as a rule it itself has an obvious cause. It may therefore be discussed separately. In our statistics, it appears chiefly as an autopsy find. Syphilis is a far more common cause of still birth than our tables show, for only in 19 cases was its presence as a cause of still birth proven beyond doubt. Our 500 cases of still birth extend over a period of eleven years, and it has only been recently that the Wassermann reaction has been established as a routine procedure.

There were 18 examples of monstrosities, chiefly anencephalus, with nine cases of hydrocephalus and two of spina bifida. While cerebral hemorrhage was found at autopsy a number of times, in but one case is it given as the cause of death. In others it may be regarded only as a complication, as there would have been no chance for survival. Hydramnios is given as the cause of death in four cases. Atelectosis and aspired mucus are given twice each, rupture of the liver once. There was one case of ectopic gestation. Finally, two cases may be set down to induction of labor and two to Cæsarean section. In three cases the only cause alleged, was ordinary breech delivery, which cases might be better classed under "Unknown" causes.

*Doubtful causes* In a small number of cases, certain conditions able to cause mortality, were present, but apparently played no essential role in the still birth, which could be sufficiently accounted for otherwise.

One would naturally suppose, that in a majority of still births, *two or more causal* factors might often be concerned as causes. An analysis, however, shows that more than one factor was in evidence in only about 5 per cent of all cases. Not only this, but one combination was seldom repeated. The individual combinations have no particular significance. Thus we see associations like toxemia and contracted pelvis, toxemia and hydrocephalus, placenta previa with prolapsed cord, cord about neck and also knotted, etc.

Of about three combined factors, the only example is one of breech presentation, short cord and premature separation of placenta.

*Prematures* An analysis of the 69 cases of premature births, does not lead to any significant conclusions. In 25 cases the term stands alone as the condition of still birth. There are 14 cases of simple macerated prematures in addition to nine others, which were syphilitic. A toxemic birth in which syphilis co-existed makes the total number of syphilitic prematures 10. In seven premature births toxemia was present in the mother (including two macerations and one case of syphilis), with one case of eclamp-

sia and there were two cases of placenta previa. There were three precipitate labors and one prolapse of cord. Other prematures were associated with hydrocephalus, monstrosity, hydramnios, "miscarriage" and atelectasis (all one case each). Two premature births were of twins. The entire number of prematures showing maceration was 28.

#### TABLE OF PELVIC INSUFFICIENCY AND FAULTY PRESENTATIONS AND POSITIONS

The conditions of pelvic insufficiency and of faulty presentation and positions are shown by the appended tables.

##### PELVIC INSUFFICIENCY

Generally contracted	14
Flat	9
Small	3
Funnel	3
Contracted outlet	2
Contracted inlet	1
Total	32

##### FAULTY PRESENTATIONS AND POSITIONS

Breech	30
Shoulder	20
Right occipito-posterior	12
Face	4
Brow	2
Total	68

##### TABLES OF OPERATIONS

###### Forceps—

"Forceps" (variety not mentioned)	19
High forceps	16
Medium forceps	9
Low forceps	7
Axis forceps	3— 54

Versions	37
Breech extractions	27
Craniotomies	17
Induction of labor	11
Difficult shoulder extraction	3
Manual dilatation	3
Cæsarean section	2
Accoutrement forcé	2
Embryotomy	2
Perforation	1
Pubiotomy	1

Total operations 160

Total number of women operated on was 123

The number of versions with or without difficult breech extractions was 37, as against a total

of 54 forceps cases (including the unsuccessful ones). Hence a total number of 91 cases, 60 per cent were examples of forceps to 40 per cent of versions. However, in six cases version was applied after failure of forceps. If we deduct this figure we have 48 cases of forceps (56.4 per cent) to 37 of version (43.6 per cent).

#### RESULTS OF AUTOPSY

The total number of autopsies made was 67, as far as the records state. These may be grouped as follows:

Negative results	14
Cerebral hemorrhage (one with fractured skull)	16
Asphyxia	25
Syphilis	12
Atelectasis	2
Aspiration of mucus	2
Rupture of liver	1
Congenital malformation	1

#### GENERAL CONSIDERATIONS

In reviewing our 500 instances of still birth among 14,468 confinements or 3.6 per cent, we deplore the absence of the routine employment of the Wasserman test, which has only in the last two years been made a rule of the hospital service.

The total number of autopsies made, namely, 67 of the 500 cases, is small. Although a pathologist is employed by the hospital, the consent for autopsy is often difficult or impossible to obtain.

While no ambulance service is maintained by the hospital, a few emergency cases are received each month from other hospitals, and from physicians and midwives. These do not tend to lessen our still birth percentage.

With limited accommodations, the hospital is first and foremost a teaching institution giving students their course in practical obstetrics, and maintaining a training school for nurses.

Although a system of supervision is maintained over the undergraduate's work, the possibility of the student as a contributing factor in our series of still births might be reckoned with.

At least one still birth, as shown by the clinical and anatomical diagnosis, can be attributed to the so called "Twilight Sleep." This labor in a healthy Para I, age 21, lasted only 11 hours and 40 minutes and terminated at 12 20 P. M. At 11 A. M. the patient received scopolamine gr 1/200 and narcophine gr 1/4, and at 12, noon twenty minutes before delivery a record dose of scopolamine gr 1/200. A birth of male child ensued which could not be resuscitated, resulted. Without doubt the opium and scopolamine

were given too near the termination of labor.

Unless employed with great judgment pituitary extract in labor cases is often a double-bladed instrument. Its introduction several years ago, as a remedy for weak uterine contractions, has doubtless accounted for many still births. How many of the 149 instances of still birth or of the 25 instances where the autopsy finding was asphyxia from unknown causes, had pituitary extract as an actual or contributory cause, we do not know. We do know, however, that in the early days of its introduction far too many cases of asphyxiated children occurred, which has led to a more conservative use of the drug.

To what extent chloroform, ether or nitrous oxide gas are contributing or direct causes of still births is an open question. Prolonged deep anesthesia during labor must always be reckoned with as predisposition to still birth. Witness the difficulty so often met with in resuscitating the child in Cæsarean section, delivered within a minute after the artificial rupture of the membranes.

In our 500 still births, aside from the 122 cases operated upon and a certain limited number of private patients, chloroform, ether or nitrous oxide anesthesia were very sparingly used. Indeed among the multipare of the outdoor or house service the employment of chloroform was the exception. Chloroform in the hospital service proper was practically limited to the primiparae and then usually only at the termination of the expulsive stage.

We may safely conclude then, that excepting the 123 operative cases, and a few private patients, chloroform and ether were not causative factors in our still birth mortality.

Scopolamine narcophine was responsible for certainly one still birth already alluded to, and possibly two others. Nitrous oxide we believe was not responsible for any of the still births.

Back of our general still birth mortality, the personal equation of the resident physician and the hospital house staff must always stand as a factor.

The great lesson—the study of our 500 instances of still birth, teaches us the need of prenatal observations and care of the patients.

It is difficult enough to persuade the patients of the upper classes that such care is imperative, it is often impossible to so convince the tenement house patient.

In the hospital from which these cases were taken we maintain a daily prenatal clinic to which patients are directed to report and send specimens of urine, etc. In connection with the Bellevue Obstetric Service we hold a prenatal clinic twice a week.

Our results in this connection until recently are far from satisfactory, often deplorable. A patient applied to the Bellevue Prenatal Clinic in a condition of advanced toxemia, was admitted to the obstetric ward and died of eclampsia. Although some toxemia pregnant women die in spite of treatment, we believe this woman, admitted a week earlier, could have been saved.

Eclampsia and advanced toxemia are mostly preventable conditions. For an eclamptic attack to develop among the "waiting women" of an obstetric ward is considered a disgrace to the service. The 24 eclampsias and 19 toxemias in our service are too many. They mostly were preventable.

Appreciating the need of prenatal observations the New York Department of Health recently appointed a sub-committee to report upon "The general obstetric care among the poor, with especial regard to their antenatal care." Doctor Ralph W. Lobenstine is chairman of the committee.

From this committee originated the Maternity Center Association, its object being to promote prenatal puerperal and postnatal care for the poor women of New York.

The ambitious program laid out by this association in conjunction with other agencies already doing effective work for expectant mothers, such as the Department of Health, the Women's City Club, the New York Milk Committee, the Association for the Improvement of the Condition of the Poor, the New York Diet Kitchen and the Henry Street Settlement, is a reduction of from 36 per cent to 40 per cent in the deaths under one month, a material lowering in the number of still births, a reduction in premature births of from 20 per cent to 25 per cent, and a maternal death rate of 65 to 75 per cent below the general city rate.

### CONCLUSIONS

The conclusions to be drawn from our series of observations have reference to several possibilities—a better system of records, a greater proportion of autopsies and biological tests, diffusion of knowledge among actual and prospective mothers, and especially oral instruction of women who have once been confined, so that better supervision may be exercised during the next pregnancy. In a word, better general obstetric care, with especial regard to closer prenatal observation of pregnant women.

In regard to the number of cases in which the child might have been born alive under favorable auspices, many of the protracted labors could be included, especially when neglect or delay figured in the case. The precipitate labors may be added. Some of the dystocic cases, especially those due to faulty presentations

and positions might have had a good chance for survival. Toxemia and eclampsia could have been averted in a goodly proportion of the cases. All of the syphilitic cases, and these must have been far more numerous than the figures show, might have been averted by early treatment of the mother. It is by no means unlikely that at least 100 babies might have been saved, and even this seemingly high number may be too small a computation. All recognize the fact that syphilis, eclampsia and toxemia are largely amenable to prevention before labor sets in, if the women could only be rounded up and placed under prophylactic measures in season. It would require too much space to consider all the possibilities which might be made practicable.

All this has a common aim—to decrease the proportion of still births. Although our mortality of 36 per cent is lower than the average, there is every reason to believe that this figure might be considerably reduced. The fact that the mortality in the home or outdoor service was less than one-half that of the hospital or indoor service (25 per cent as compared with 59 per cent) is readily comprehended, for all cases in which the mother's life is threatened are hurried into the maternity.

But 40 out of 123 women were operated on in the home or outdoor service. Roughly speaking, about one woman in four in the total maternity who had a still birth required operative intervention. The total percentage of hospital or indoor operative cases was 30 per cent. Outdoor, 17 per cent, average, 23.5 per cent.

One of the greatest needs is a complete autopsy and Wassermann service. Autopsy is now and then impossible on account of extreme maceration, but this number could hardly prejudice the general results. Not only would these resources cut down greatly the large number of deaths from unknown causes through an increase in the number of syphilitics, but some light might be thrown on the subject of intrauterine asphyxia, as a result of routine placental studies, etc. Few attempts seem to have been made to determine the period at which maceration sets in, in the individual case. In only a few instances is it stated that "mother has felt no fetal movements for some days, or weeks," or "no fetal heart sounds heard" for a given time.

In general there is a great need for a standard report blank for still births, adopted by some health board or obstetrical society; although the haste and confusion consequent in emergency cases might make it difficult to get replies to some questions. Listening for the fetal heart sounds seems indispensable at times, in deciding upon what course to pursue, and in making a diagnosis of intrauterine death.

One of the most hopeless problems confronting us is the elimination of pre-maturity as a

condition resulting in still birth. Of our 69 cases of pre-maturity, a third or 23 cases have pre-maturity alone as the condition of still birth. The cause of still birth in the remaining two-thirds of prematurity cases is accounted for by syphilis, toxemia, or both co existing, placenta previa, precipitate labor, prolapse of the cord, hydrocephalus, hydramnios, and teleketasis.

The tenement house woman is especially prone to abortion and premature labor. This cannot be charged up to physical or psychical shock to the mother. External 'injury' or shock plays little part as a causative factor. In only one of our 500 observations is there mention of a fall on the part of the mother and it is added that "no hemorrhage followed." Nor can the cause be laid to overwork or physical overstrain such as the tenement house woman is greatly exposed to. The real underlying cause of pre-maturity among the tenement house women, and this holds good to a less extent only among the so-called upper classes as well as the too early getting about after confinement, before involution is more than partially accomplished, and the resulting subinvolution displacements and endometrical changes. The longer existence of these conditions leads to even earlier interruption of pregnancy.

Syphilis can be treated and cured, toxemia and eclampsia prevented, obstructed labor foreseen, protracted labor relieved, operative technique improved, but the prevention of subinvolution in the tenement house woman who insists upon returning to her daily tasks within a week after confinement, for the moment, appears entirely hopeless.

Allowance must be made for a tendency of fetal death, without any assignable cause, such as is seen in still births under the most favorable conditions. Nearly 5 per cent of still births are thus explained. If so many can perish under favorable circumstances, it is also possible that many children who have passed the 28th week may succumb from unknown causes before labor sets in, as a result of intrauterine asphyxia and in the absence of known factors.

Hence if we assume that in 500 cases 100 or more children could have been saved under favorable conditions, we must also assume that a fair number could never have been saved under the most favorable conditions. These constitute an irreducible minimum. Between these extremes the still births represent the death rate normal in instrumental deliveries, placental and cord conditions and the like.

The keynote for the further reduction of still birth mortality among the so called upper classes as well as the tenement home population would read: Better obstetric care with especial reference to prenatal observation.

## THE ESTABLISHMENT AND MAINTENANCE OF BREAST-FEEDING \*

By J P CROZER GRIFFITH, M.D.,  
PHILADELPHIA PA

FOR the establishment and maintenance of breast-feeding provision should be taken, if it were possible, before the mother is born. That is to say, there is no question that the ability to nurse an infant successfully is to a large extent a matter of inheritance. Further, it seems very probable that a line of mothers who, though able, practise a voluntary refusal to suckle their offspring, finally develops an acquired characteristic which can be transmitted resulting in an inability in the mothers of the younger generations to perform the maternal function of nursing. Consequently were we able to carry out the principles of eugenics to their logical conclusion a young woman before being permitted to marry would be subjected to an examination of her mammary glands, in order to determine whether they were of a size and form which made an ability to suckle probable, and in addition the details of the mother's personal experience in maternal nursing would need to be investigated. This would be the first and one of the most important elements in the efforts to establish and maintain the secretion of milk, should she have a child. It may be noted too, that the inability to nurse of which we hear so much, is to a large extent a matter of locality. In certain regions of Germany, for instance, nursing is common, in others the power seems less well developed, or at least nursing is infrequent. It is evident that such a condition is the result not of race but of custom. The determination and the effort to nurse being present the nursing ability is often also and this is then inherited by the daughter. In many regions, as in Japan, artificial feeding has been almost unknown. The Eskimos are said to nurse their infants until the third year, and in some parts of Africa it would appear that even previous parturition is not required, but that the mere stimulation of the breast by putting a child to it will enable one of the female adult members of the family to aid in the nourishment of the infant should some accident to the mother have rendered this necessary.

Another important influence upon the establishment of breast-feeding is the manner in which the mother has been brought up as a girl. It goes without question that, in the average at least although of course with exceptions the woman whose girlhood has been passed in the most hygienic manner, who has developed a sound strong body and who has avoided causes which tend to the production of nervous conditions, will

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 27 1918

be the best purveyor of food for her infant. It is the neurotic mother who is liable to give the poorest milk, if any at all, and after her child is born it is often too late to make attempts to obviate the difficulty. Here again we may see the influence of inheritance also, for the mother may be neurotic through no fault in her upbringing, but because her parents, father or mother, were of this nature.

How frequent, in reality, the inability to nurse actually is, constitutes a subject much disputed. In several previous contributions it has been my privilege to discuss the matter, and the conclusions were unavoidable that unwillingness played a very prominent role. This is to a large extent the fault of the physician in attendance at the time of the confinement. It would appear to me that the growing desire of women of the better class to nurse their infants comes from what they have learned from the numerous mothers' clubs, publications in the lay-press upon the importance of breast-feeding, and the like, and not to the degree it should from the advice by the medical profession. I cannot, it is true, prove this, yet it is my sincere conviction, and it is certainly a reproach to the medical profession if it is true. I doubt whether there is a physician of experience in the feeding of infants who has not repeatedly encountered cases where early weaning was advised by the accoucheur, without, as far as can be ascertained, any sufficiently adequate reason. In many other instances it is through the advice of a too officious obstetrical nurse that the effort to nurse the baby has been given up by the mother. If medical men in general recognized the enormous advantage which the breast-fed baby possesses over the bottle-fed, and would untiringly preach the dogma of maternal nursing to their clientele, I believe it would not be many years before we would see a marked increase taking place in the number of women able to nurse their children.

Given then the mother who in the early weeks of the infant's life has either a milk-secretion which appears to be deficient, or which seems to disagree with the infant, our first duty is to caution against haste in weaning and to give all possible encouragement to the mother. A secretion which has not been well-established by the classical third day may yet become satisfactorily abundant if given a little longer time, and in the cases where the milk appears to produce indigestion, it is to be remembered that it takes about two weeks before the colostrum-character has entirely disappeared and the fully developed normal equilibrium-milk is produced. When the secretion is slow in being established, frequent pumping of the breast may be of advantage. Further, it is very possible that after the mother leaves the bed and resumes her normal method of living, a deficient milk-supply will change to an abundant one.

As regards the early emptying of the breast, it not infrequently happens that a weakly infant is unable to suck satisfactorily, and the breasts are left constantly too full. Nothing will so soon diminish the milk-supply as this insufficient emptying, and nothing, on the other hand, conduces so greatly to an increase in the secretion as the increase of the demands made upon it. It is astonishing how much milk wet-nurses in institutions for children sometimes supply. Laurentius, for instance, records the case of a woman thus employed who produced  $3\frac{3}{4}$  quarts in a single day. Consequently when a mother early has much more milk than her infant can take, it is often a useful procedure to empty the breast by the pump or by pressure after the nursing is over, continuing this until the needs of the child grow greater.

Another very important matter in the maintenance of the maternal secretion is the preservation of a normal psychic state. As is well known, a sudden mental shock may cause an immediate cessation of secretion. This may be permanent, but it should not be assumed that it will be so, and efforts at nursing should continue, the infant meanwhile receiving artificial food after its unsuccessful attempts to obtain milk from the breast. A similar cause of a defective milk-supply is worry. An instance comes to my mind,—and I have no doubt many such will occur to you,—in which a mother became unable to nurse her baby merely because she worried lest she *should* become so. On the assurance that she certainly would regain her power in full, and that the infant meanwhile would not be allowed to suffer for lack of food, her supply soon returned in force and she nursed her child until it was well over six months of age. In every instance where a mother has an insufficient supply, an attempt should be made to give the infant *supplemental* feedings, not *substitute* ones. Sometimes even this may be avoided by allowing the child to nurse from both breasts at each feeding. The stimulation of this procedure may increase the milk-supply. If not the baby may be allowed at each feeding to nurse from one breast all it can get, the amount being determined by weighing the child before and after nursing, and then be given a bottle of artificial food as a supplement to what it had received of the natural supply. Even a little breast-milk is much better than none, and this is particularly true in the first three months of life. Something present in the breast-milk seems to make the digestion of the artificial food easier for the child.

Later in the infant's life the question constantly arises as to the advisability of giving one or two bottles a day. I believe there is no surer way of causing cessation of the milk-secretion. If on account of the mother's engagements it is advisable to relieve her from a nursing, her

breasts may be pumped and the milk then fed from a bottle in her absence. If it is on account of an insufficient secretion that the plan is proposed, by far the better method is that mentioned, of giving some supplemental feeding after each breast-feeding. By this plan of stimulating the breast the supply is more likely to be maintained.

It is not the province of this paper to discuss the question of the proper intervals between nursings, at least so far as the needs of the infant are concerned. There is now a vogue prevailing in some regions which appears to have been "made in Germany," for the reduction of the number of feedings is compared with the practice of the past, and the lengthening of the nursing intervals. I need only point out here the experience of Leo, Clark, Leven and Barret, Tobler and Bogen, Ladd, Pisek and Lewald, Flesch and Peteri, and others, which shows that the average normal breast-fed infant empties its stomach in  $1\frac{1}{2}$  to 2 hours, and that it is therefore ready again for food at this time should the giving of it seem advisable. Further that the efforts to establish any hard and fast rule is an error, since the amount taken by infants of the same age varies greatly, or even by the same infant at different nursings, and it is manifest that the total quantity ingested in 24 hours should be our guide. The only bearing on the present subject is the recognition of the fact that the longer the intervals the less stimulation of the breasts occurs, and the greater the danger of the milk-supply diminishing. This applies of course, to the thorough emptying of the breast by older children. In the case of very young infants, as pointed out, it is often well to use the breast-pump or some other means to empty the breasts after nursing. An insufficient emptying at any age is liable to diminish the amount of milk secreted.

Pertinent here is the consideration of other measures at our disposal to increase the milk-supply or to improve its quality. The diet should be nourishing and abundant. There should be a considerable amount of liquid in it. This sometimes increases the quantity of milk without altering its composition, but a large amount of liquid is liable merely to dilute the infant's food. Cow's milk given to the mother offers no advantage over weak tea or even water, provided she is already well-nourished, and a mother who is gorged with milk, cocoa, and the like is liable to have her digestion disturbed, or to grow too fat without augmenting the amount of milk secreted. Malt liquors undoubtedly increase the flow of milk in some instances. The advisability of administering them varies with the case.

Exercise has a distinct influence upon the composition of the milk. A lack of sufficient exercise in the case of overfed women with

hearty appetites is likely to produce a milk too rich in its total solids, especially the protein and fat. In such an event daily outdoor exercise taken to the point of a healthy sensation of moderate fatigue tends to reduce the solids to a more normal amount. On the other hand, the underfed and overworked women of the poorer class are liable to furnish milk deficient in quantity and often lacking in a proper amount of fat and having either too little or too much protein.

The occurrence of menstruation is commonly believed by the laity to be harmful to the milk and to make weaning advisable. The truth of the matter would appear to be that menstruation has little if any influence upon the character of the milk. This was satisfactorily demonstrated by the careful studies of Bamberg. There is often a slight falling off in the quantity or a disturbance of the quality during the menstrual period, but usually not beyond what may be considered a normal variation. As a matter of fact, the occurrence of menstruation is often an indication that the secretion of milk will soon become deficient in amount, but there is no need of our anticipating this. Galactagogues are usually this in name only. A large number of vegetable drugs have been recommended, among them cottonseed, nuxse, and pilocarpin, and in recent years trial has been made of many animal substances, such as pituitary extract, placenta, ovary, suprarenal body, and the subcutaneous injection of milk. Benefit has been reported in some cases with each of these but the evidence for any possible good in the majority of instances is inconclusive.

*Modification of breast-milk.* It has been believed that it is readily possible to modify in various ways the secretion of an imperfect breast-milk. From what has already been stated, it must be concluded that this can be done only to a very limited extent. In the case of the overfed and inactive woman success may sometimes be reached by an alteration of the diet and exercise, as also in the underfed and overworked woman. Unfortunately the majority of women with a secretion deficient in quantity or quality belong to the more or less neurotic class, whether by inheritance or as a result of previous faulty methods of living and with these diet and exercise have usually little permanent influence. The effort should be made to regulate the life as far as possible upon a normal hygienic plan and especially to eliminate all causes of worry of any sort. In this way, and in other ways already outlined, the quality of the milk may at least be prevented from growing any worse and the amount of secretion may often be maintained at least for a sufficient time to enable the infant to obtain a good start in life before artificial feeding becomes more than a slightly supplemental measure.

## CLASSIFICATION AND SERUM TREATMENT OF PNEUMONIA AT CAMP UPTON

By RUSSELL L. CECIL, M.D.

Major M. D. C., U. S. Army

THE health conditions of Camp Upton have been generally good ever since the camp was opened in September, 1917. Measles and mumps have been fairly prevalent, but have not been seen in a virulent form, and only ten cases of epidemic meningitis have occurred. During the fall and the early part of winter there was very little pneumonia and this was of the lobar type, of low virulence and of pneumococcus origin. Beginning with December, however, the incidence of pneumonia increased month by month and the record for March shows 107 admissions for this infection. It was observed that the increase in the incidence of pneumonia coincided with the arrival in camp of 3,500 colored troops from the South and it is of considerable significance that though the negroes constituted only 10 per cent of the command, 105 cases of pneumonia (or 33 per cent of the total) occurred among the negroes. Furthermore, it is interesting to note that as the number of cases of pneumonia increased, a larger and larger percentage were found to be of streptococcic origin, so that by April streptococcus pneumonia was two and a half times as common as pneumococcus pneumonia. This prevalence of streptococcus pneumonia was in small part related to the measles epidemic. Out of 154 cases of measles only 30 developed pneumonia. There was also a few cases of pneumonia secondary to mumps, German measles, scarlet fever, and influenza. A great majority of our pneumonias, however, were undoubtedly primary infections.

This report is based on a series of 326 cases of pneumonia which occurred at Camp Upton between November 1, 1917, and May 1, 1918. In 305 of these cases the bacteriological examination of sputum was made. The methods employed for this examination were: First, the blood broth method of Avery in 115 cases, second, the mouse method in 74 cases, third, both the blood broth and the mouse methods in 63 cases. Both methods were used in the latter part of the study as a check on the accuracy of our work and to determine which method was the more accurate of the two.

Table I shows the incidence of the various bacteria which were predominant in these cases. It will be seen from this table that there were 154 cases of streptococcus pneumonia and 141 pneumococcus pneumonia. In other words, streptococcus infections have been slightly more fre-

quent than pneumococcus infections. This, I believe, has been observed in a number of the other camps. For the sake of comparison the same table shows the classification of 480 pneumonias studied at the Rockefeller Institute and recently reported in a monograph by Avery, Chickering, Cole and Dochez. In the Rockefeller series pneumococcus easily plays the dominant role, causing 94.5 per cent of all the pneumonic infections. Streptococcus caused only 3 per cent of the infections in the Rockefeller series as against 50 per cent in the Camp Upton series. In addition to these two large groups we have encountered an occasional case of influenza pneumonia and a few cases where micrococcus catarrhalis appeared to be the exciting agent. This table indicates that pneumonia in civil life and pneumonia in camp life differ widely in a bacteriological sense. It will be shown later that there is just as great a difference clinically and pathologically.

### I THE PNEUMOCOCCUS PNEUMONIAS

A very large percentage of these pneumococcus cases were primary pneumonias and almost without exception, of the lobar type. These infections differ in no way from the lobar pneumonia seen in civil life, and the mortality rate, 20.6 per cent, would indicate that they were not unusually virulent.

In Table II the incidence of the various types of pneumococcus is shown and for comparison the type incidence in the Rockefeller series is also indicated. It will be seen from this table that so far as Type I and III are concerned, there is very little difference in incidence between civil pneumonias and camp pneumonias. Type II pneumococcus has not been so prevalent as in civil life, causing only 13 per cent of all the pneumococcus infections. On the other hand, Type IV pneumococcus infection has been much more frequent in camp than in the city, 57 per cent of all the pneumococcus pneumonias being apparently due to Type IV. In other words, Type IV pneumonias were more than twice as frequent at Camp Upton as they were in New York City. This great predominance in Type IV infections can possibly be explained by the fact that in the early part of February almost one-half of the command were vaccinated against pneumococcus Type I, II and III.

Three or four doses of pneumococcus vaccine were given at intervals of five to seven days. The vaccinated men were under observation for ten weeks and during that period of time no cases of pneumonia of the three types vaccinated against had occurred among the men who had received two or more injections of the vaccine. Among the unvaccinated there were twenty-six cases of pneumonia of the Types I, II or III during the same period.

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 22, 1918.

The mortality rate differed considerably for the different groups of pneumococcus infection. In the Type I cases it was 10 per cent in the twenty cases that received Type I antipneumococcus serum. In the Type II cases the mortality rate was 37 per cent but in Type III cases only 23 per cent, as compared with 45 per cent in the Rockefeller series. Type IV cases were only moderately severe, showing a mortality of 18 per cent as compared with 16 per cent in the Rockefeller series. It was the Type II cases in our series rather than the Type III cases which presented the gravest prognosis.

## II STREPTOCOCCUS PNEUMONIAE

Cases of streptococcus infection constituted 50 per cent of all the pneumonias included in this study. It is important, however, to divide the group, at the outset, into two subgroups—the streptococcus haemolyticus cases and the streptococcus viridans cases. In Table III it will be seen that 64 per cent of our streptococcus cases were of the haemolytic type and 36 per cent of the viridans type.

*Streptococcus Haemolyticus Pneumoniae*—These constitute the largest group in the present series of a single type of infection. It is also the most interesting group because of its rarity in civil life and also because it presents a clinical picture quite different from pneumonia as we have been accustomed to see it in civilian hospitals. The patient who often gives a history of some recent infection of the upper respiratory tract is admitted to the hospital complaining of a cough, fever and occasionally, pain in the side. The cough is usually dry and may be often entirely absent, a feature which makes it difficult or impossible to collect a satisfactory specimen of sputum. The sputum itself is rather characteristic. It is usually of a white or yellowish color, quite viscid and mucopurulent. The rusty or haemorrhagic sputum of lobar pneumonia is rarely seen. The fever usually runs an irregular course, and considerable febrile periods succeeded by rapid oscillations as in an active sepsis appear at the onset. The pulse and respiration are in proportion to the temperature. Pain in the side is a very inconstant symptom and when present is an additional cause of the inspiratory distress. Physical signs are often indefinite. On percussion areas of dullness may or may not be present at first. Moist crackling rales are nearly always to be heard at times confused with the pleuritic friction rale, but typical bronchial voice and breathing are rather unusual signs at the onset of the pneumonia. More often the voice and breath sounds are faint.

This type of pneumonia in spite of its streptococcal origin is remarkably free from metastases. This is no doubt due to the fact that the blood culture is usually sterile. There is

one complication, however, that occurs with great frequency, and that is empyema.

Prognosis in this group is grave, the mortality rate being 39.3 per cent. The large number of fatalities is unquestionably due to the frequent associations of empyema. At autopsy a peculiar type of broncho pneumonia is found, which may simulate lobar pneumonia when its patches coalesce. Lesions are found about the bronchi, the walls of which are thickened. On section of the lung the bronchioles stand out with remarkable distinctness and are usually filled with pus. The walls of the bronchioles appear thicker than normal and there is an overgrowth of fibrous tissue throughout the organ which recentrates the fibrous trabeculae. The thickening about the bronchioles may be so marked as to give them the appearance of small tubercles or milium abscesses. Even in those cases where a part or all of a lobe is consolidated these changes have been observed in other parts of the lungs.

Microscopical sections of the lungs in these cases show areas of broncho-pneumonia around the bronchioles and an extensive infiltration of small round cells about the bronchioles and blood vessels. There is a marked tendency toward organization of the exudate in the alveoli, which consists of unusually dense fibrin, lymphocytes and desquamated epithelial cells.

*Streptococcus Viridans Pneumonia*—This type of pneumonia has not been encountered in many of the other camps, but has been fairly frequent at Camp Upton constituting 36 per cent of the streptococcus group. This, too, is a broncho-pneumonia, but of a very mild type. The mortality rate was only 10 per cent which is lower than that for any of the other groups except the serum treated Type I pneumococcus cases. These cases run such a mild course that in some of them the diagnosis of pneumonia could never have been substantiated without the help of the A-ray.

## COMPLICATIONS

There is only one complication that has occurred with any degree of frequency in this series of pneumonias and that is empyema. That this however, has been very prevalent can be readily understood from the statement that in 326 cases of pneumonia 80 have developed empyema. This complication usually occurs in connection with streptococcus pneumonia and differs as widely from the classic type of empyema as streptococcus pneumonia differs from the ordinary lobar pneumonia of civil life.

By referring to Table IV it will be seen that the cases of empyema naturally fall into three groups, First, pneumococcus empyema, Second streptococcus empyema, Third sterile empyema. These three groups will be discussed separately.

First There were fifteen cases of pneumococcus empyema associated in every case with lobar pneumonia of pneumococcus origin. Five of these cases died, a mortality of 32 per cent. This type of empyema develops late in the course of the disease and is usually diagnosed by the sudden rise in temperature and the pulse and the presence of frank signs of fluid in the chest. On exploring with the needle, cloudy or creamy pus is withdrawn which on examination shows many pus cells and capsulated pneumococci.

Second Streptococcus empyemas. By far the largest number of our empyema cases were streptococcus infections and it is this group that constitutes the most interesting phase of the problem. For the convenience of discussion it will be well to sub-divide this group into three sub-groups.

(a) Streptococcus Haemolyticus empyemas

(b) Streptococcus Viridans empyemas

(c) Streptococcus empyemas following Pneumococcus Infections

(a) Streptococcus Haemolyticus empyemas.—In this group there were twenty-nine cases in which streptococcus haemolyticus was recovered in pure culture from the empyema fluid and in which bacteriological examination of the sputum showed the same organism. There were seven other cases in which the haemolytic streptococcus was recovered from the pleural exudate, but in which for some unavoidable reason, the sputum was not examined. In these seven cases, however, the clinical course and physical signs strongly indicated a streptococcus pneumonia, so they probably belong to this group. These thirty-six cases constitute a fairly definite and characteristic picture.

These empyemas develop early in the course of the pneumonia. It is often present when the patient is admitted to the hospital. Subjective symptoms may be entirely absent. There is nothing characteristic in the temperature and pulse. Profuse sweats are sometimes present, but rarely accompanied by chills. As for the physical signs in the chest, dullness or flatness on percussion is of the greatest value. The other physical signs usually observed in empyemas with fluid in the chest may or may not be present. The most valuable aids in the diagnosis of this condition are the X-ray and the exploring needle. The latter should be used frequently.

(b) Streptococcus Viridans empyemas.—In this group of cases cultures from both the sputum and the pleural exudate showed a streptococcus of the non-haemolyzing variety. There were four cases of this type. Clinically these cases have differed in no respect from the streptococcus haemolyticus cases. All four of these were cases of broncho-pneumonia, and the symptoms and signs of empyema were similar in

every way to those of streptococcus haemolyticus empyema. Three out of the four cases died.

(c) Mixed Infections, or Streptococcus Empyemas following Pneumococcus Pneumonias.—This very interesting group of mixed infections consists of nine cases and corroborates the findings of Cole and McCallum at Fort Sam Houston. In these cases the pneumococcus was cultivated from the sputum but cultures from the pleural exudate gave streptococcus, either haemolyticus or viridans. Pneumococci of the Types II, III and IV are represented in this group of mixed infections. There is also a case which we include in this group which gave pneumococcus Type IV in the sputum, but staphylococcus aureus in the exudate. It is possible, however, that the staphylococcus infection developed after operation and drainage had been performed. The majority of these cases were frank lobar pneumonias. There were two cases diagnosed as broncho-pneumonia, and it may have been that in these two cases mouth pneumococci confused the bacteriological picture. This was also a highly fatal group, six out of ten cases dying. Clinically the empyema in this group possessed all the characteristics of the pure streptococcus type.

Summarizing these three sub-groups there were forty-nine streptococcus empyemas with thirty deaths, a mortality rate of 61 per cent.

Third Sterile Empyemas.—In addition to the sixty-five empyemas already mentioned we have included in our study fifteen cases in which fluid of a purulent or semi-purulent nature was removed from the pleural cavity, but from which cultures were sterile. In several of these cases Gram positive cocci were seen in smears from the pleural fluid. They usually showed, however, some sign of disintegration and could not be cultivated, even on blood media. Ten of these empyemas were associated with pneumococcus pneumonias of the lobar type, and five died. Five cases were associated with streptococcus pneumonia and two of these died.

#### TREATMENT OF PNEUMONIA

In addition to the symptomatic treatment of our pneumonias, serum treatment has been tried quite extensively, especially on the first hundred cases. A great majority of the Type I pneumonias were treated with the Type I antipneumococcus serum. The results were very gratifying as will be seen from the fact that out of the twenty cases which received serum, only two died, and one of these was complicated by scarlet fever and acute nephritis. In addition to the Type I cases, thirty-five other cases of pneumococcus pneumonia, including all types, were treated with a polyvalent antipneumococcus serum. The serum was sent to us by the Government in the early part of the year,

and we decided to try it on a few cases in order to determine whether it possessed any therapeutic value. Thirteen of the thirty-five cases died, a mortality of 37 per cent. We inferred from this small series of cases that the serum added nothing to the treatment in these cases—indeed that it probably did more harm than good—so its use was discontinued.

The technique of serum administration was as follows. As soon as the bacteriological diagnosis of pneumococcus pneumonia had been made, the patient was desensitized by a subcutaneous injection of one half cubic centimeter of normal horse serum. Five or six hours later, 90 to 100 cc of antipneumococcus serum, heated to body temperature, was given intravenously by the gravity method.

**The Effect of Serum.**—Following the injection of serum there was often a slight rise in temperature, followed by a sudden drop of several degrees. In the Type I cases the decrease in temperature was often permanent, but in the pneumonias of other types, the temperature usually rose in a few hours to its original height. Serum sickness was noted in a considerable number of our cases, but rarely caused much inconvenience. Typical anaphylactic symptoms were noted in two cases.

The first case was that of a colored man with a Type III pneumococcus pneumonia. Two hours after receiving  $\frac{1}{2}$  cc of normal horse serum, 100 cc of polyvalent antipneumococcus serum was injected intravenously. Five minutes after the completion of the injection the patient became intensely restless, the pulse was weak and rapid and there was marked dyspnea and relaxation of the sphincters. These symptoms lasted only a few minutes, after which the patient began to improve and made a complete recovery. No cause could be found for this patient's hypersensitiveness to horse serum.

The second case was also a Type III pneumococcus case. This patient, who had been quite ill, had received one dose of polyvalent antipneumococcus serum (100 cc) intravenously without any unpleasant symptoms following. The patient went on to normal convalescence but had a relapse, and sixteen days after the first injection of horse serum he received another intravenous injection without the knowledge of the laboratory chief. After he had received 50 cc of the second dose the patient suddenly sat up in bed and exclaimed that he couldn't breathe, became very cyanotic and the pulse was rapid and thready. Dyspnea became more marked in spite of artificial respiration or stimulation. The patient died a few minutes later. This accident could probably have been avoided if more determined efforts had been made to desensitize the patient before the second injection. As it was, he received  $\frac{1}{2}$  cc of normal horse serum three

hours before the larger dose was given intravenously and this was not sufficient to neutralize the very high degree of susceptibility which he had derived from the first injection of serum two weeks previous. Every effort should be made to prevent these unfortunate accidents, for they tend to prejudice both physician and layman against the use of antiserum.

It is very much to be hoped that an antistreptococcus serum will be produced for the treatment of streptococcus pneumonia, which, so far as infectious diseases go, is the gravest problem which now faces the army.

TABLE I  
CLASSIFICATION OF PNEUMONIAS

	Rockefeller Institute Series (480 cases)		Camp Upton Series (305 cases)	
	In- cidence	Per centage	In- cidence	Per centage
Pneumococcus	454	94.5%	141	46%
Streptococcus	14	3.0%	154	50%
Influenza Bacillus	6	1.3%	4	1%
Friedlander Bacillus	3	0.6%		
Staphylococcus Aureus	3	0.6%		
Micrococcus Catarrhalis			6	2%

TABLE II  
INCIDENCE OF VARIOUS PNEUMOCOCCUS TYPES

	Rockefeller Institute Series		Camp Upton Series	
	In- cidence	Per- centage	In- cidence	Per- centage
Pneumococcus Type I	151	33%	29	21%
Pneumococcus Type II	152	34%	19	13%
Pneumococcus Type III	59	13%	13	9%
Pneumococcus Type IV	92	20%	82	57%

INCIDENCE OF TWO STREPTOCOCCUS TYPES

Streptococcus Haemolyticus	99	64%
Streptococcus Viridans	55	36%

TABLE III  
MORTALITY RATE FOR VARIOUS TYPES OF PNEUMONIA

	Rockefeller Institute Series		Camp Upton Series	
	In- cidence	Per- centage	In- cidence	Per- centage
Pneumococcus Type I	151	33%	29	21%
Pneumococcus Type II	152	34%	19	13%
Pneumococcus Type III	59	13%	13	9%
Pneumococcus Type IV	92	20%	82	57%
Streptococcus Haemolyticus			99	64%
Streptococcus Viridans			55	36%
Mortality rate in Pneumococcus cases				20.6%

TABLE IV

CLASSIFICATION OF 80 EMPYEMAS

Group 1 Pneumococcus in both sputum and pleural exudate			
	Cases	Deaths	
Type I in both	3	0	
Type II in both	4	2	
Type IV in both	6	2	
Type II in sputum, Type IV in pleural exudate	1	0	
Sputum—not typed Type IV in pleural exudate	1	1	
Total	15	5 (33%)	

† 75% in cases treated with Type I serum  
† 10% in cases treated with Type I serum

Group 2 Streptococcus in both sputum and pleural exudate	Cases	Deaths
Streptococcus Haemolyticus in both	29	16
Sputum—not typed, Streptococcus Haemolyticus in pleural exudate	7	6
Streptococcus Viridans in both	4	3
Total	40	25 (60%)

Group 3 Mixed Infections	Cases	Deaths
Pneumococcus Type II in sputum, Staphylococcus Viridans in pleural exudate	1	1
Pneumococcus Type II in sputum, Staphylococcus Haemolyticus in pleural exudate	2	1
Pneumococcus Type III in sputum, Staphylococcus Haemolyticus in pleural exudate	1	0
Pneumococcus Type IV in sputum, Staphylococcus Haemolyticus in pleural exudate	4	2
Pneumococcus Type IV in sputum, Staphylococcus Viridans in pleural exudate	1	1
Pneumococcus Type IV in sputum, Staphylococcus aureus in pleural exudate	1	1
Total	10	6 (60%)

Group 4 Sterile Empyemas	Cases	Deaths
Pneumococcus Type I in sputum	2	1
Pneumococcus Type II "	2	2
Pneumococcus Type III "	1	1
Pneumococcus Type IV "	5	1
Streptococcus Haemolyticus	3	1
Streptococcus Viridans	2	1
Total	15	7 (47%)

## THE PHYSICIAN AND THE PUBLIC

By HENRY LYLE WINTER, M.D., F.A.C.P.

Chairman, Committee on Medical Economics, Medical Society of the State of New York  
CORNWALL, N. Y.

**A**LWAYS, since the beginning, the world has been progressing toward whatever may be its goal. Now by the slow process of peaceful evolution, again by leaps through the medium of violence or of inspiration, but always, in the main, gaining somewhat for greater good for a greater number. At no time, however, in its whole history, has the world progressed as rapidly as during the last thirty years. Applied science, inspired, has pushed the world centuries ahead, and yet each separate group of workers was and is so engrossed in its own immediate problems, pushing still further, that only the actual contacts of the several fields, rawing their edges perhaps, indicate their interrelations and mutual influences. There has been no recognizable effort at correlation, co-operation for the mere purposes of trade being the sole objective to the present

The progress of medicine has gone on apace, equalling or excelling other branches of science. Here or there it has touched its fellows, and has given or taken, but not enough to leave a lasting impression upon the ranks of the profession. The establishment of sections on public health and preventive medicine, and of committees on economics in some of the larger medical societies, and the accumulation of a considerable literature upon the subject of occupational diseases, are straws which show which way the wind blows, but which appear to have very little meaning for the busy physician, overworked and unmindful to take on added problems.

On the other hand the enactment of workmen's compensation laws and the voluntary medical care of employees by some employers, have apparently meant as little to both these classes. The immediate obvious necessity has been met, and every thing is quiet for the time being, so why worry. It is possible to allow this attitude to employer and employee in so far as health problems are concerned, but if the whole social system is not to suffer, medical men have got to learn their lesson from the great industrial revolution we are passing through, and to take their places in the social reconstruction which has grown into too great a problem to be allowed to drift, but must be carefully guided. If it is to reach a safe harbor its pilots must sit together and work out its course, which will be over an uncharted sea, and the knowledge and experience of each pilot must have the full appreciation and unprejudiced approval of the group. Medicine, with its specialized knowledge, must sit at the board.

In all great crises the medical profession has proved itself. The present emergency is no exception. The medical departments of the army, navy and public health service have demonstrated their efficiency. The able heads of these departments have the support of a united profession, and it is this support which has enabled the efficiency. The initiative arose through concerted action. The Medical Section of the Council of National Defense and the American Medical Association represent the organized effort which is responsible for the attitude of the profession. Without this organization it would have taken months longer to have reached present conditions. Now, with the necessity for further increase of the several Medical Corps, a situation confronts us which would be absolutely out of hand except for our organization. I refer to the medical care of the civilian population. It will be the duty of the Medical Section of the Council of National Defense to see to it that the civilian population suffers as little as possible by the withdrawal of medical men for military service. This is no small matter and entails an infinite amount of work and the utilization of the best judgment obtainable. As it is our first and most im-

\* Read at the Meeting of the Eighth District Branch, Medical Society of the State of New York at Buffalo, September 4, 1918

portant duty to provide an army the difficulties are apparent. When we consider that the Council of National Defense was created merely as an advisory body and that it has no powers of decision delegated to it, these difficulties are multiplied. Fortunately the work of the Medical Section has been sufficiently well performed to meet with the expressed approval of President Wilson, and it is hoped that this may influence the War Department to see to it that certain powers be granted. In administering the new Man power Act, drafting all men up to forty-six years of age, it is absolutely imperative that some discrimination be made in the drafting of physicians. It is essential that community and institutional needs be considered, even above the usual personal exemptions granted by law. It is probable that these are covered, within the meaning of the law, by the discharge from the draft granted for industrial reasons, but up to the present time these questions have not been considered by the district boards, and those boards are not constituted to deal intelligently with them. It is the hope of the Council of National Defense that Provost-Marshal General Crowder will use every effort to place in the hands of the Medical Section the decision as to which medical men, amongst those of draft age, will go into the army and which will stay at home. With this power the military forces will be fully supplied and the civilian population much better provided for than by any other scheme. Knowing the members of the profession as I do, and knowing the personal sacrifices that thousands of them are making to serve our country, I feel that every man would willingly place himself at the disposition of his brother physicians who compose the Medical Section of the Council of National Defense and abide by their decision. I hope that every medical man who feels as I do about this will use his influence to endeavor to accomplish the above mentioned results.

The distinctly medical problems which are arising out of the war are receiving the closest attention of those medical men who are most competent in the several specialties and these men are co-operating with workers in other fields. We are joining in to find fields for work for the maimed and blinded and those mentally disturbed by the awful conflict in which they are engaged. We are succeeding. There will be little human flotsam and jetsam cast up and left in the back waters of life by the receding tides of war. The salvage corps in which we figure prominently is beginning to do a great work. There has never been a time when the medical profession has failed to meet the conditions which are presented. We have a right to feel pride in its accomplishments, but let us heed the scriptural admonition and "be not puffed up" because there are very many things in which we fail.

In one of the above paragraphs I have referred to the conference which must be held if society is to be guided to a safe harbor. Here is our weak point. We never have assumed our proper attitude toward subjects of public importance while they were in the making. Except for a few measures which concerned the actual practice of medicine we have shown no initiative.

No one is going to invite us to such a conference unless we prove that we are entitled to attend. It depends upon ourselves and our attitude whether we become the hand maidens of the public or directors of social advancement. If the former we will not only be relegated to an inferior position, but the public will suffer for lack of expert guidance. For the good of society therefore, as well as for our own advancement, we must change our attitude.

This is not going to be an easy matter. Our traditions hold us. The history of medicine explains how we have become a peculiarly isolated profession. We have not taken the public into our confidence sufficiently. We have continued sectarianism to the point where it nauseates even ourselves. With the advent of modern pathology every excuse for sectarian practice was annihilated. But the public does not know this. It is a tribute to the growth of human intelligence and greed for knowledge more than to any effort of ours that the number of sectarian medical schools and the number of sectarian students is rapidly decreasing. How can one expect the public to know that there is a definite scientific basis for medical science when we ourselves continue to prate of homeopaths and allopaths and eclectics. We have gone far in eliminating this in New York State by the establishment of a non-sectarian Board of Medical Examiners but we have not told the public enough about it.

The fact that we do not tell the public, and that the public hears echoes of discussions by medical men who have been left so far behind in the progress of science that they continue to talk of schools of practice, account for the readiness with which the layman builds his own theories of medicine.

If it were not unfortunate it would be amusing to hear the public, and the so called intelligent part of it most often, discourse upon its ills and their treatment.

It would take an observing man perhaps a full day to memorize the processes used in making a carpet. He could not hope to familiarize himself with the facts of modern medicine in quite that limited space of time. Yet if you asked that man how to make a carpet he would open his eyes in surprise and tell you that of course he did not know about carpets, that his business was something else. Ask him almost anything about his or some one else's ills, however, and he would in all probability take himself most

seriously and advise most earnestly, and, to himself, satisfactorily

This same man may proclaim a belief in the efficiency of medical practice. He probably places considerable reliance upon the judgment of some particular physician, but there is a subconscious readiness to accept some part, at least, of any "ism" which strikes his fancy.

He takes liberties with this branch of science which he takes with no other, he formulates opinions without adequate inquiry. If it did not, how could Christian Science and Chiropractic and the hundred and one other healing cults exist? Of course, they could not. No properly informed person is going to follow the vagaries of a mentally unstable woman and her satellites. No informed person is going to put his life and future in jeopardy by permitting a chiropractor, ignorant of everything pertaining to the science of medicine, to "adjust" his spine for any and every ailment he may have. No informed person is going to put his health and happiness in the hands of any practitioner of any "cult."

When one says these things to the laity the results are likely to be discouraging, and one's natural tendency is to keep quiet, because it is unpleasant to have one's earnest efforts met by either amusement or indignation.

If the remarks amuse your hearers they are likely to suggest that these "cults" are cutting in on the practice of medicine—that they are probably "hurting business." If indignation is aroused you will possibly be told that people of the highest intelligence are followers of this or that "cult." I was recently informed that Christian Science *must* be valuable because Judge ——— was one of its followers. Judge ——— is an eminent jurist, he is seldom reversed. I have, however, acted as a medical expert witness in many courts and it is my experience that eminent jurists may possess abysmal ignorance of medical subjects.

That this judge had built up a medical theory of his own, like the cook made the bread pudding, "out of his own hand," was unfortunate, and it was your fault and mine! We have kept ourselves and our knowledge so isolated that the public, naturally curious about its anatomy and its ills, has formed opinions of its own.

This plea which I am making for publicity is not new. I, personally, urged it over twenty years ago, and I claim no originality. Several years ago the American Medical Association advocated the same plan. Much literature was distributed and a large amount of good accomplished. It was unfortunate, however, that the bulk of the effort was a propaganda for reform. An attack upon patent medicine, fake advertising and fake cures. The objects of these attacks, having money and no principles, fought back in a way which reached the public and left in its

mind the idea that the medical profession was engaged in a mercenary campaign. They talked of that ridiculous impossibility, "the medical trust," and were assisted by the unscrupulous medical men who owned or edited so-called medical journals, the existence of which depended upon the continued patronage of the very class the decent part of the medical profession was endeavoring to exterminate. In many instances these journals, as you probably know, had a wide circulation without any paid subscription list whatever. The effect of this publicity campaign would have been less prompt but in my judgment, more enduring, if a greater effort at instruction of the public in some of the fundamental scientific facts in modern medicine had been included.

As individuals we can help to broaden the public knowledge of medicine by always finding time to answer laymen's questions. If we cannot find time at the moment we should take the earliest opportunity to furnish the desired information. This is not only good for the public, it is also good for the profession. The more frank you are, the more you tell the layman of what you know and acknowledge your limitations, the greater will be his confidence. You have only to look about your own city for proof of this. Your most successful men, from every point of view, are those whom the public has learned to trust for their candor and frankness. It is this type of man which holds medicine on so high a plane. The only trouble with us is that there are so few men of this type. Every member of the medical profession is a potential factor for the improvement of the community, of his profession, of himself. If he fails in any of these directions his failure is a public calamity.

As a profession we have the larger duties to society which we must face. We can no longer sit by and ignore our responsibilities. We have permitted other, and less qualified, groups to go on formulating laws for the conservation of physical efficiency and to do it very badly. Our excuse has been that this or that is outside our field of activities—that we are doctors and not concerned with other matters. It is true that we are trained primarily to heal the sick, but the technical character of this training not only broadens our field so that it touches every ramification of human endeavor, but leaves us the only group competent to do this work well.

For a number of years I have gone before legislative bodies for the purpose of opposing legislation which would react against the public and the medical profession. I rebel at the thought that I am always in opposition. There is something distasteful and, sometimes, humiliating in being a perpetual obstructionist, even if the work is in a good cause. Legislators treat us with the greatest respect. They listen to our

opinions and are guided by them, and many pernicious bills fail, but it is uncomfortable to be asked, "Well, Doctor, if you don't want this what do you want?" and to have to admit that you don't want anything, *you only just don't want this*.

The logical mind infers that there must be some reason behind all agitation. If a certain group seeks specific legislation there must be a reason. If the reason is wholly a selfish one the fact becomes apparent almost immediately and one has no objection to being regarded as an obstructionist to such legislation but when debatable subjects are proposed conditions are quite different. Legislators grow to have the same attitude toward the profession that the public has toward lesser groups of physicians, that we are satisfied to be unprogressive, to remain within ourselves and to go on minding our own little affairs until someone treads on our toes. Then we are ready to get together and howl until the aggressor takes his feet off ours. The unfortunate thing is that as a matter of fact, there is much justice in the legislator's attitude. As I said above, we have got to remedy this. While we will always have our own little affairs which will need attention and protection we can no longer continue our isolation or dodge the responsibilities which modern civilization impose upon us.

During the next decade, following the war, social conditions will begin to assume the form in which they have been and are moulding. It is impossible for us to see the future in any detail, but as coming events cast their shadows it is a certainty that the world will revolve around the worker. The man who does something, who is a producer, has rapidly forged to the front during the past few years, until, even now, the old order of things has practically passed. In the boyhoods of those of us who have reached middle age to be "in trade" stigmatized one as a social inferior. Today trade is no bar to any ambition and the man who is willing to subsist upon "unearned increment," and to do nothing, has no place in the scheme of things.

The above mentioned industrial revolution has already put the worker, the producer in the seats of the governing classes. Tomorrow will see all workers, no matter how humble their positions, active participants in the functions of government. The employee of today will be the master worker of tomorrow. Intimate understanding between the several classes will be established by this inevitable scheme of promotions. Friction between labor and capital will materially lessen because of the consequent better understanding of the needs of one group by the other. As a result of this a general co-operation for the betterment of mankind will follow and with Prussianism eliminated, the world will be a better place

to live in. The part of the medical profession in the reorganization stands out most prominently. Our problems may be summed up in the one phrase, "human conservation." It is our duty to line up in the front ranks of the workers and to strive for this object.

When we enter public activities we are getting into unfamiliar fields and we must move slowly and in harmony with other interests, but we must not for one moment relinquish our right to be heard on medical topics. We acknowledge the worker as the prime factor in the social welfare of the future. Our duty is to see that he is mentally and physically able to express his individuality to its fullest capacity. In order that we may do this successfully we must assume a broad authority, backed by state or nation, over his method of living, the conditions attending his employment and the education and physical training of his children. The administration of this authority need never be harsh, and, as time passes and the worker learns that his efficiency is primarily measured in terms of health, he will enthusiastically co-operate with us. We will find ample justification for assuming control by a brief survey of the returns from the administration of the selective draft. Out of two and one half million men between the ages of twenty-one and thirty-one examined, eight hundred and thirty thousand, or one-third of the whole number, were found physically unfit for military service. From my own experience in the selective draft I know that a very large proportion of these defects were preventable. They were your patients and my patients and we had been seeing them for years and it takes figures of this magnitude to show us our shortcomings.

We have sat by and watched other groups put upon the statute books laws dealing with distinctly medical questions. Some of them may have been as well formulated and as effective as though we had inspired them, but we failed in our duty when we let some one else do our work.

The workman's compensation laws now in force in the several states should have been formulated with the co-operation of the medical profession, and yet I am reasonably certain that a very large proportion of the profession did not even know of their enactment until compelled to serve under their administration.

Today the profession is wile to the fact that we are facing an effort to put the most revolutionary kind of legislation into operation. I refer to health insurance or social insurance. In New York State we have considered the subject carefully, the Medical Society of the State of New York has gone on record as opposed to the measure, and its representatives have assisted in successfully opposing all attempts to enact it into a law. Through the country at large however, there is no such unanimity of action. The

American Medical Association has practically indorsed the principles of health insurance, without limiting itself to the support of any special bill. I regard it as most unfortunate that that association should have taken the action which it did when, in 1917, it instructed its Council on Health and Public Instruction to co-operate "in the moulding of these laws that the health of the community may be properly protected and the interests of the medical profession properly safeguarded." This sounds well. Read by a man of pleasing personality and a good voice it would carry conviction to any man who does not think. To any man who thinks it would appear to be the "sounding brass and tinkling cymbal" that it is, for there is nothing in any health insurance proposition so far advanced which can do other than react to the detriment if the public health and the medical profession. The point which I am trying to make that the medical profession should learn to think and act for itself cannot be more forcefully illustrated than by telling you that *The American Medical Association permitted the appointment of I W Rubinow, Ph D, as executive secretary of its Committee for the Study of Health Insurance*. Dr Rubinow is an eminent economist. If I am correctly informed his thesis upon which his degree of Doctor of Philosophy was granted was upon the subject of health insurance. He is not a physician, and is one of the most active proponents of health insurance in the United States. I acknowledge his erudition, but have the temerity to differ with him, not upon the academic questions involved in social insurance, but upon its application to American conditions. From my knowledge of group psychology it is my opinion that the findings of any committee, not composed of economists, in which Dr Rubinow was the leading spirit, would be a foregone conclusion.

After a considerable study of health insurance and an experience of over twenty-six years in observing the problems of the sick in all conditions and stations of life, I feel that I am entitled to an opinion. My opinion is that health insurance should never become a law in any part of the United States. We should, however, bring the united strength of the medical profession to bear in an effort to further legislation for an extension of the fields of preventive medicine. This is one of our immediate duties. Here we can study medical conditions in co-operation with employers and employees and develop a system which will eventually produce and maintain the best type of that distinctly American product and the backbone of our national prosperity, the *efficient individual*. Then if, in years to come, we are unfortunate enough to be thrust into another war we will not find one third of our young men physically disqualified for service.

## Medical Society of State of New York

### COMMITTEE ON PRIZE ESSAYS

The committee in charge of the Merritt H. Cash \$100 and Lucien Howe \$100 prize funds of the Medical Society of the State of New York would respectfully announce that both prizes are open for competition at the next annual meeting of the State society at Syracuse on May 6, 1919.

Dr Howe states "that the prize is to be given for the best original contribution to our knowledge of surgery, preferably ophthalmology." It is not limited to members of the State Society.

The Merritt H. Cash Prize is to be awarded to the author of the best original essay on medical or surgical subjects, and is only open to members of the State Society.

The committee would suggest the following—but not arbitrary—subjects—

1. The best abstract of papers that have been presented on the immediate treatment of all kinds of wounds occurring in the present world's war.
2. Present Status of Poliomyelitis—Its etiology, pathology, clinical manifestations and the present methods of diagnosis and treatment.
3. What have been the latest developments in the surgery of injuries to the skull, spinal column and peripheral nerves, as shown in the present war?
4. What are the special eye conditions which should disqualify men as workers in industrial occupations, railway service and the army and navy?
5. The control of disease-bearing parasites in military life.

The author need not necessarily be a member of the Medical Society of the State of New York, but the data, methods and everything relating to the successful essay shall remain the property of that society to be made public as it may direct.

The essay shall be typewritten or printed, and the only means of identification of the author shall be a motto or other device. It shall be accompanied by a sealed envelope, having on the outside the same motto or device, and containing the name and address of the writer. Essays must be sent to the chairman of the committee, Dr. Vander Veer, not later than the 1st of April, 1919.

A VANDER VEER, M.D., 28 Eagle Street, Albany  
EDWARD D. FISHER, M.D., New York  
CHARLES G. STOCKTON, M.D., Buffalo

### District Branch Meetings

#### EIGHTH DISTRICT BRANCH

ANNUAL MEETING, BUFFALO

September 4, 1918

Morning Session

The meeting was called to order in Alumni Hall, University of Buffalo. The President, Dr. Albert T. Lytle, in the chair. Moved and seconded that the minutes be accepted as published in the JOURNAL. Carried.

Moved and seconded to receive the report as presented by the President of the Executive Committee. Carried.

The President read a letter from Dr. Lyman C. Lewis, stating that he had been granted a commission in the Medical Reserve Corps and therefore could not serve as secretary, and asking that his resignation be accepted. Moved and seconded that the letter from Dr. Lewis be received, but that his resignation be not accepted. Carried.

Moved and seconded that the President be authorized to appoint a Secretary Pro Tem for the unexpired term of Dr. Lewis. Carried. The President appointed Dr. W. Warren Britt, Tonawanda, as Secretary Pro Tem.

The President read a telegram from Dr. Henry L. Winter, Cornwall, stating that he regretted that he would not be able to attend the meeting and asking

that his paper be read Moved and seconded that the reading of Dr Winter's paper be deferred to the after noon session

The President read a communication from Mrs Thomson stating that Dr William R. Thomson of War saw had entered the service of the Government

The President read a communication from Dr Emerson W. Ayers of Alfred, regretting that owing to his duties as captain in the Medical Reserves that he would be unable to be present

As Counselor the President reported that he would like to receive the notices of meetings of County Societies so that he could arrange to visit the different County meetings

'Syphilis and the Public' Albert T. Lytle MD President Eighth District Branch Buffalo

Moved and seconded that a vote of thanks be extended by a rising vote to the President for his most able address Unanimously carried

'Some Early Symptoms of Cardiac Failure' Arthur L. Runals MD, O'Brien Discussions Henry R. Hopkins MD Buffalo, Albert M. Rooker MD Niagara Falls

'Medical Unity' Floyd M. Crandall MD Secretary Medical Society State of New York New York

Following the morning session a luncheon was served in the College Library

#### Afternoon Session

Helping the Backward Child Franklin W. Barrows MD, Albany

'Pathology and Treatment of Corneal Ulcers' Norman W. Price MD Niagara Falls

Care of the Mentally Disabled Soldier' Major Albert E. Brownrigg MRC USA Commanding Officer U S General Hospital No 4 Fort Porter

Moved and seconded that a vote of thanks be extended to the guests of the Branch Major Brownrigg Dr Price Dr Barrows and Dr Runals for their presence and their contributions to the program Carried

Moved and seconded that a vote of thanks be extended to the University of Buffalo for the courtesy of allowing the meeting to be held in the College building Carried

Moved and seconded that owing to the lateness of the hour the paper of Henry Lyle Winter MD of Cornwall The Physician and the Public be read by title Carried

There being no further business the meeting adjourned

### Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by a full equivalent to those sending them A selection from these volumes will be made for review as dictated by their merits or in the interest of our readers

A MANUAL OF OTOTOLOGY By Gorham Bacon AB MD FACS Assisted by Truman Laurant Saunders AB MD Seventh Edition 593 pages 204 illustrations and 2 plates 12mo New York & Philadelphia Lea & Febiger 1918 \$3.00

LA SUSCINATION DANS LE TRAITEMENT DES FRACTURES APPAREILS ANGLO-AMERICAINS Par P. DYSPOSEY et CHARLES ROBERT 172 pp Illustrated Plates 12mo Paris Masson & Cie 1918 Paper 4 fr

COMMUNICATIONS ET EMOTIONS DE GUFFRE Par A. LERI 196 pp Plates 12mo Paris Masson & Cie 1918 Paper 4 fr

GYMNASTIC TREATMENT FOR JOINT AND MUSCLE DISABILITIES By Brevet Col H. C. DEANE R.A.M.C. in charge of War Hospital Croydon with preface by Temp Col A. CARLESS Army Medical Service Consulting Surgeon Eastern Command and by Brevet Lieut Col F. W. MOTT F.R.S. R.A.M.C. (T) Maudsley Hospital Denmark Hill London Henry Frowde Hodder & Stoughton Oxford University Press New York 1918

MILITARY SURGERY OF THE ZONE OF THE ADVANCE By GEORGE DE TARNOWSKY, MD FACS Illustrated 330 pp 16mo Philadelphia and New York Lea & Febiger 1918 \$1.50 (Medical War Manual No 7)

### Book Reviews

THE TREATMENT OF WAR WOUNDS By W. W. KENNEDY MD LL.D. Emeritus Professor Surgery, Jefferson Medical College Phila Second Edition Reset 12mo 276 pages illustrated Philadelphia and London W. B. Saunders Co 1918 Cloth \$2.00 net

The second edition appears after a lapse of six months This book received special commendation in these columns December 1917 The clinical studies of war wounds and active practical research in England France and the United States have brought about many changes The result is almost an entirely new book More space is recorded shock and greater emphasis laid upon treatment Abstracts of important papers by well known authorities are included The subject of the localization and removal of foreign bodies is taken up by Maj John S. Shearer and Dr David R. Bowen The apparatus devised by the late genius May E. W. Cadwell receives favorable mention The increased space given to the Carrel Dakin technic Dichloramine T fractures tetanus wounds of the head chest and joints is welcomed

So constant is the flux of war surgery at the front that the personal letters appended in the first edition are now somewhat obsolete Several of these have been revised namely, those of Sir Anthony Bowlby Majors Joseph Blake and George Crile The others appearing in the first edition have not been reprinted New letters of interest are included from Dr William S. Hirstead Colonel R. Tait McKenzie and Dr Victor C. Heister The latter relates his observations on loading and unloading hospital trains in Italy

ROYALE H. FOWLER

RECLAIMING THE MAIMED A Handbook of Physical Therapy By R. TAIT MCKENZIE MD Major RA MC Prof Physical Therapy University Pennsylvania Illustrated New York The Macmillan Co 1918

Conservation and reclamation of the moral and physical welfare of its man power is one of the most striking features in the plans and attainments of the Allied nations in the Great War This handbook deals with the practical application of the important and often neglected physical agencies which are now used successfully in the British French Italian and Belgian armies and which are to have a prominent place in body restoration of the men of the Army and Navy of the United States Electricity, hydrotherapy massage and corrective and recreative gymnastics are not new therapeutic procedures but their value as reconstructive measures are now appreciated as never before This well assembled pocket manual comes from the pen of one whose attainments before the war commanded respect but who now adds the results of a rich experience as supervising officer in convalescent institutions in the British Army The opening chapter outlines the scope of physical therapy touches on its relationship to other fields of medicine as applied to army work and names the equipment necessary for a department of physical therapy in an army convalescent hospital Two chapters deal with electrical therapeutics two more with radiant heat and light and with hydrotherapy In the next three chapters—on massage and passive movements on active movements and neuro-muscular re-education and on gymnastics and athletic games—reconstructive agencies—the writer is on most familiar ground Here his message is most valuable The simple and ingenious apparatus of F. A. Bott Ph.D. of Toronto for re-education of disabled arms and legs is thoroughly described Masking of facial deformity by artificial parts would not seem to belong to a book on physical therapy, but one can recognize the temptation

to McKenzie, the sculptor, and forgive a possible breach in the unity of an otherwise well-rounded manual as McKenzie, the writer, presents his last chapter in so interesting a form

The book is well illustrated with photographs and diagrams, and should be of value not only to the worker—whether medical or lay—among the injured fighting men, but to all interested in physical therapy

WALTER TRUSLOW

**BIPP TREATMENT OF WAR WOUNDS** By RUTHERFORD MORRISON, Professor of Surgery, Durham University, Senior Surgeon, Northumberland War Hospital London Henry Frowde, Hodder & Stoughton, Oxford University Press New York, 1918 Price, \$1.00

The originator of a method is expected to be enthusiastic, but this small book fairly glows with confidence and sincerity Its perusal convinces one that much of the criticism of the past may have arisen from faulty technique, and also that decided improvement has been made in the method since its introduction

This is a brief, well-written, compact presentation of the indications for and the methods of using Bipp in infected wounds An account is given of a number of cases in which the use of Bipp proved a failure and the reasons for this are indicated

This is interesting reading for those who are not already wedded to the Carrel-Dakin method It will be necessary for historians in future years to weigh the relative merits of the various methods of wound treatment that have been developed during the present war In any such discussion a large place will undoubtedly be given to Bipp

HENRY F GRAHAM

**AMPUTATION STUMPS—THEIR CARE AND AFTER TREATMENT** By G MARTIN HUGGINS, FRCS, Medical Officer, Government Schools, Salisbury, Rhodesia, Late Surgical Specialist, Pavilion Military Hospital, Brighton, London, Henry Frowde, Hodder & Stoughton, Oxford University Press New York, 1918 Price, \$2.75

The author of this little volume of about two hundred pages gives as his reason for offering another monograph to a long-suffering medical profession the fact that within the past year he has cared for three thousand amputation cases and has found such a large number of bad stumps

No space has been wasted in useless theory Every paragraph presents the final deductions from a ripe experience

One sentence deserves quotation even in a short review "Because a patient has a discharging sinus and is in a surgical ward, his condition does not necessarily require operation"

We wonder that no mention is made of the aperiosteal amputation of Bunge, but nevertheless this book should be in every surgeon's library To attempt to summarize it would be like abbreviating an epigram

HENRY F GRAHAM

**A DIABETIC MANUAL FOR THE MUTUAL USE OF DOCTOR AND PATIENT** By ELLIOTT P JOSLIN MD Illustrated 187 pp, 12mo Philadelphia and New York Lea and Febiger, 1918 Cloth, \$1.75

This book is intended for the instruction and guidance of the diabetic patient as well as the physician, and therefore affects a popular style of presentation which, while it makes the book more intelligible to the patient, does not make it less so to the physician In a moderate space are set forth the main facts in the conventional treatment of diabetes as generally accepted at the present time extensive tables of food values are given, and also a number of detailed dietetic prescriptions and recipes for preparing special dishes for diabetics The more important of the simpler laboratory tests useful in the treatment of diabetes are described Many valuable practical points in the general management and nursing of diabetics are brought out

E E C

## In Memoriam

Captain CHARLES HENRY GALLAGHER

Born October 6, 1876,

Died August 28, 1918

Dr Gallagher died of bronco-pneumonia at Base Hospital 202, Orleans, France, of which he was a staff member

He was graduated at Syracuse University Medical College 1896, the youngest member ever to leave that institution Was Nu Sigma Nu Was post graduate there 1897 and on staff of St Joseph's Hospital Internes Rochester City Hospital 1896-7, Was in practice at East Waverly, N Y, 1897-1900, Slaterville 1901-12, Ithaca 1912-18 Was general anesthetist for Dr Martin B Tinker Joined MRC as Captain, was ordered to Ft Oglethorpe in March, in April was in replacement battalion U S Ambulance Corps at Al-lentown Sailed to an English port, then to France At an earlier date he was to have joined Majors Shearer, Crile and Gant in Red Cross Experimental base hospital work in British lines

He was married at Montrose, Pa, in 1900, to Miss Stella Lyons, who, with two children, Frances and Thurston, survive him He was buried with full civil, military and Masonic honors at the City Cemetery at Orleans

Captain Gallagher's work in anesthesia and his improvements upon the Gwathmey-Gallagher anesthesia apparatus were his monument, had he not a greater in the hearts of his fellows because of his uprightness, probity and sprightly good cheer

Oh Captain! Our Captain! Thy earthly trip is done  
Thy cause espoused in winning, its course is nearly run,  
For pity's sake this risk to take, nor thought of self  
give pause,  
Regardless of the friends behind, to work in freedom's cause  
Caress his memory, bless his cheer,  
Fulfill in deeds his lead,  
Brush back a-lack the faltering tear,  
Exalt, exalt the dead

LUZFRNE COVILLE  
ARTHUR D WHITE  
CARL F DENMAN

For the Tompkins County  
Medical Society

## Deaths

FRANK HEWITT BARTLETT, MD, New York City, died September 13, 1918

CHARLES HENRY GALLAGHER, MD, Ithaca, died August 28, 1918

CHARLES L HEALY, MD, Oswego, died August 26, 1918

MARION EUGENE MARTIN, MD, Attica, died August 14, 1918

SIDNEY LEHMAN SPIEGELBERG, MD, New York City, died July 15, 1918

EDWARD J WARE, MD, New York City, died September 29, 1918

RAE WIGANT WHIDDEN, MD, New York City, died September 25, 1918

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M.D. Editor

FLOYD MILFORD CRANDALL M.D. Acting Editor

Business and Editorial Offices 17 West 43d Street New York U.S.A.

Add: s Journals sent in Exchange to 1313 Bedford Avenue Brooklyn N.Y. U.S.A.

## COMMITTEE ON PUBLICATION

SRW S Tom M.D. Chairman New York

Pdw d L ng ton Hunt M.D. New York

A Clifford M rec M.D. Syracuse

W Meddaugh Du ning M.D. Bronx

Frank V n Fleet M.D. New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions. Published in the Journal

Vol XVIII

NOVEMBER 1918

No 11

## EDITORIAL DEPARTMENT

### COUNTY MEDICAL MEETINGS

THE varying character of medical society meetings, whether good, bad, or indifferent, is rarely a matter of chance. The meeting is usually what the organizer of the program makes it. There seems to be a peculiar knack, or perhaps an acquired ability on the part of some individuals to make up a good meeting. Some seem to have an intuitive knowledge of what their medical brethren are thinking about, and what will interest them. No one can make up a good meeting who is not well informed and up to date, and is not acquainted with medical progress. Therefore, in those societies in which the President is responsible for the programs, no benevolent old doctor should be elected as a mere honor. He should have been elected twenty years before while he was yet alive. There is too much tendency to elect superannuated members to active executive office merely to enable them to sing a swan song with dignity.

This is a live age, no other age has ever been so much alive as this of today. War times have accentuated this fact. There has never been a time when the giving of executive office as a compliment has been so much out of place as it is now. The medical profession needs in the offices of its Societies, men of experience, but at

the same time men of vigor and knowledge, men in touch with the rapidly changing conditions of the profession and the country. Such men only can make up adequate and satisfactory programs. In the great majority of cases successful meetings are "worked up." Oftentimes a good paper offered by a member may be used as a nucleus around which an interesting meeting may be constructed.

It is rarely advisable to limit the meeting to one extended paper. If it is long and intricate, it should be limited in the time of its reading. Except in rare cases, twenty minutes or thirty at the most should be the limit. The presiding officer should insist upon this. The reader of the paper should be informed of the limit for reading when the paper is accepted.

Some of the best Society papers are those written more or less in outline. Some readers have the ability to sow seed thoughts as Oliver Wendell Holmes calls them. Such papers excite thought and are apt to induce active discussion. They stimulate hearers to present pertinent facts or to describe cases bearing upon the subject. The discussion is often the best part of the meeting. It suggests various aspects of the subject as viewed from different standpoints. It rescues the meeting from monotony and dreari-

ness which often results from presentation by one speaker. Moreover, a general discussion calls out many members who have really something to say but would not feel equal to appearing with a set paper. Doctors are busy men, and the reputation of the Society for having prolonged, dreary meetings will do much to prevent their attendance. On the other hand, the reputation of the Society for having, short, interesting meetings will be an incentive for large attendance.

One of the most frequent errors in the making up of Society meetings consist of presenting too many papers and curtailing the opportunity for discussion. There is a feeling on the part of some program makers, especially those of less experience, that they must announce many papers in order to attract an attendance. During the Society-meeting season, the average practitioner is a busy man. He is usually a tired man, frequently a sleepy man. He is better pleased with a crisp, live meeting of an hour and a half, than one drawn out to three hours. He likes to hear discussions, and will often be drawn into taking part in them.

Evening meetings should close at ten o'clock. This gives the busy doctor time to make a few late calls, and the tired doctor an opportunity to go to his bed and obtain the sleep he so much needs. Gray matter has its limitations, and does not function well after fifteen or sixteen hours of activity.

A satisfactory form for an occasional meeting is the symposium. Here a single subject is selected and different portions are assigned to competent men. Such a meeting is especially successful when specialists are available, or those who have made special investigations. In societies holding frequent meetings an occasional symposium may draw an especially large attendance.

Several years ago the meetings of one of the Sections of the New York Academy of Medicine had fallen to very low ebb. A vigorous and clever chairman was elected who brought them up in two meetings to a most prosperous condition. The attendance so suddenly increased that a larger room was required. He adopted for a part of his meetings the "ten minute papers," then a novelty. This, added to a certain intuition of what the profession was thinking about and wanted to hear about, was the secret of his success. Under this system a subject is adopted

and several readers are secured, a different portion being assigned to each. After the papers are read the whole subject is open for discussion on a five minute limit, and it is usually vigorous and active. While called a "ten minute paper," more time is often assigned. The essential point is that the papers are short and present in the most concise possible form a portion of the subject. One advantage is, that no introduction or extraneous matter is required. The writer can devote his whole time to a concise statement of facts.

In meetings of every type the presiding officer should hold the readers and speakers to time. Many a good program has been spoiled and the meeting made a failure by the lack of nerve on the part of the presiding officer in not restricting garrulous members.

Another type of meeting assigns each paper to a definite hour. Some members will come at that time who are not interested in the other papers on the program. This system has been especially used in Paris. It requires great judgment in the arrangement of the program, and an iron nerve on the part of the presiding officer in carrying it out. It has not proved generally satisfactory in this country. In a few District Branch meetings it has been used with success. Most members come from a distance and will make special effort to be present at the reading of some particular paper.

Recognition of the social tendencies of physicians has been found to be a valuable means of securing good attendance. A collation, therefore, has been instituted by many societies. It is to be fully commended. It enables members to meet in friendly intercourse who would not otherwise be able to do so. Old acquaintances are renewed, new ones are formed, friendly feelings are engendered, all of which act powerfully for good. A judicious combination of scientific and social features in the society meetings is strongly to be urged.

In conclusion, we would again emphasize the fact that successful medical society meetings are rarely accidental. They must be carefully considered and thought out and then worked up. Knowledge of medical conditions, thought, and labor are requisites for success. When present, and combined with conscientious effort, successful meetings are certain to follow.

## Original Articles

### THE DIFFERENTIAL DIAGNOSIS BETWEEN CHRONIC GASTRIC ULCER AND CARCINOMA OF THE STOMACH\*

By SEYMOUR BASCH, M.D.

NEW YORK CITY

THE importance of correct diagnosis in gastro-intestinal diseases cannot be overestimated, for thereon necessarily depend prognosis and proper therapy. Previous to the introduction of the stomach tube, clinical diagnosis was based almost entirely upon pathology of structure. With increased use of the stomach tube, came interest in pathology of function and within a short period a vast array of symptom complexes were discovered and described as disease entities.

Through increasing opportunities for early and more efficient operative procedures through rapid advancement in pathological chemical and Roentgenological laboratory methods, as well as more systematic investigation and checking up of clinical material and the standardization of records, and more especially through closer co-operative study in all these lines of medical pursuit, we are daily acquiring valuable and definite knowledge in these complex problems of gastro intestinal disease.

Of all the affections of the stomach none has been more frequently the source of erroneous diagnosis than ulcer. This is not surprising since the stomach is so intimately associated through nerve paths with other organs of the body, and the reflex motor and secretory disturbances excited by extra gastric conditions are common manifestations, too, of ulcer.

In no other disease of the stomach is this confusion in diagnosis with ulcer attended by such serious consequences as in gastric cancer. The exact pathological relationship between chronic gastric ulcer and cancer is still an unsettled problem and is foreign to the purposes of this presentation. Evidence is, however fast gathering that the *clinical* relationship between chronic gastric ulcer and cancer is of more frequency than has been supposed. This is not surprising in view of the fact that most cases of *ulcus carcinomatousum* are found in ulcers of long standing and in individuals who have reached the age of cancer predisposition.

Since the differential diagnosis between the two conditions will necessarily and chiefly depend on our ability to diagnose straight ulcer and straight cancer it will be best first to briefly recall the chief clinical characteristics of these two diseases.

**Chronic Gastric Ulcer**—This is an affection of long standing (six months to forty years, average twelve years), found most frequently during the third decade of life and manifesting itself in gastric distress or pain which in the early cases is *periodic* and usually in direct association with food ingestion and the degree of gastric acidity, while in advanced and complicated cases it tends to become more frequent or even continuous. There are present also epigastric or dorsal point tenderness, often vomiting, the vomitus or stomach content usually having a high degree of acidity and not infrequently containing visible or chemical blood. In advanced cases we often also find products of gastric stagnation and fermentation. As a rule there is an excessive desire for food frequently, however, associated with sitophobia or fear of eating. Except during acute attacks or in the advanced or complicated stages, the general nutrition suffers but little.

**Gastric Cancer**—This is an affection of middle or advanced life, of short duration with a *continuous and rapidly downward progressive course*, often with no previous history of gastric complaint though not infrequently there is a pre-cancerous history of catarrh or ulcer. Gastric cancer is characterized by marked decrease in appetite, weight and strength, by anemia and cachexia by gastric distress or pain not necessarily associated with meals, and by vomitus or stomach contents usually with diminished or absent hydrochloric acid which is frequently replaced by lactic and other organic acids. The stomach contents often also contain blood, excessive mucus and decomposition products with stagnant masses and foreign micro-organisms. In addition a visible or palpable tumor is frequently present. Occasionally the diagnosis has been helped through the findings of tumor fragments in the vomitus and washed out stomach contents especially in the softer types of tumors.

Both these conditions have X-ray characteristics which will be later discussed.

Before an audience such as gathered here today it is unnecessary to enter into any detailed discussion of the individual symptoms, they are long familiar to you all. Unfortunately, the so called specific tests for cancer whether carried out with stomach content direct, e.g., the glycyl-tryptophan reaction, the formal index, the edisin the Salomon and the Wolff and Junghann's tests the Gulzinski method of determining acidity etc., or carried out indirectly with the patient's blood, as the hemolytic reaction of Lang the skin reaction of Elsberg Neuhof and Geist, Freund and Kanner's test, the antitryptic reaction the mostigmin reaction, etc. though each and all have led their enthusiastic advocates they have, at best, only a relative value. Most of them are too complicated and technically difficult to be readily applied. Of them all perhaps the Wolff

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 23 1918

Junghann's test for soluble albumen will appeal best to the practitioner

It is easily carried out, inexpensive and takes but little time to do. From its very nature, *viz*, the demonstration of albuminous substances rendered soluble through the peptoid-splitting ferments of the neoplasm, the test should be carried out only in those gastric contents that are achylie

Smithies reports the following comparative results in 230 cases of operatively or pathologically demonstrated gastric cancers

Wolff-Junghann's test, positive or suspicious in	80 %
Free H Cl, absent in	52 2%
Lactic ac, present in	48 8%
Occult blood in	75 %
Glycyltryptophan test, in	40 %
Average Formal-index, malignant cases	21 %
Non malignant cases	14 5% or less
Boas-Oppler (lactic acid) bacilli present in	93 8%

It would thus seem that a positive Wolff-Junghann's test and the presence of the Boas-Oppler bacilli in the stomach are the most constant laboratory findings in gastric cancer

Just a few words about the X-rays. Undoubtedly they have proven themselves of immense value in the diagnosis of both chronic gastric ulcer and cancer. However, despite the enthusiastic claims of Roentgenologists, many clinicians still feel that much of the information X-ray examinations give us can almost as readily be gained by carefully carried out routine examinations. I would endorse this opinion only in regard to the diagnosis of *uncomplicated* gastric ulcer and to the *early* diagnosis of cancer, or even to fairly well advanced malignancy, where it does not involve an orifice or curvature or produce marked deformity of the stomach outline. From personal experience, I know of patients who were explored and closed up because of advanced and inoperable carcinoma, particularly of the fundus and lesser curvature, where X-ray examinations made by experts gave not the least hint of the extent and, occasionally, even, too, of the presence, of the growth. The claims of Cole, George, Stewart and others that in the X-ray we possess our most valuable means for the *early* diagnosis of cancer of the stomach, can be accepted only after more extended proof

In this field the X-ray finds its greatest value in the diagnosis of the location of the lesion and the nature of any existing complications. In no other way short of operation can the size, form, position, fixity, tone, peristaltic activity, relation to other organs and deformities such as hour-glass contraction, old stomach perforations, peristaltic breaks, etc., be so well diagnosed

as with the X-ray. This method also gives us definite information of the progress of the diseased condition

For obvious reasons a detailed discussion of the Roentgenological diagnosis and differential diagnosis of chronic gastric ulcer and cancer cannot be entered into here. According to George and Leonard, the following five variations from the normal gastric bismuth shadow are of fundamental importance in the diagnosis of peptic ulcer and appearing singly or associated they are nearly pathognomonic of this lesion.

- (a) Bismuth in the ulcer crater
- (b) Passage of bismuth through the gastric wall due to a chronic perforation
- (c) Defect in the bismuth shadow from induration in the gastric wall
- (d) Permanent hour-glass
- (e) Pyloric obstruction other than from new growth

The Roentgenological characteristic of gastric cancer is the filling defect in the stomach shadow. Since malignant growths spread irregularly and their free (inner) surface is not smooth, their shadow or filling defects are irregular, uneven and ragged, giving a motheaten or wormeaten appearance. This applies more particularly to the softer types. The scirrhus variety, aside from its tendency to contract and produce constricting effects, is apt to infiltrate the walls and stiffen them and thus cause a break in the peristalsis and often a widening and gaping of the pyloric canal. In extreme cases, the entire stomach may be involved, its walls being absolutely rigid and giving no evidence of peristalsis while its lumen is very much contracted. George, of Boston, has called attention to the annular character of the filling defect in very early cases of pyloric carcinoma. He states that this annular appearance is the fundamental characteristic which distinguishes this affection from ordinary chronic ulcer in this region. Peristaltic breaks are best observed in fluoroscopy and filling defects on the plates. Fluoroscopy and plate work each have their special advantages and the best results are obtained through their combined use.

From all the above data it will be seen that these two affections have contrasting characteristics and in the average fairly typical case there should be no difficulty in differentiating between them. The difficulty will, however, arise, first, in very early cases of cancer, which give a previous history most suggestive of chronic ulcer and in which the predominant clinical manifestation are those of ulcer, secondly, in very typical cases of either kind of disease in which the symptomology and objective findings are not clear cut, and, thirdly, in borderline cases where

there is a transition from the one type (ulcer) to that of the other (cancer). In advanced cases too, of gastric ulcer, particularly those associated with palpable inflammatory tumors, where the symptoms become more frequent or continuous and lead to extreme fear of eating or to pyloric obstruction and consequent vomiting and inanition, so that progressive, or perhaps, rapid loss in weight and general weakness ensue, we have a clinical picture that closely resembles that of cancer. Needless to say, we have at present no absolute test for either cancer or ulcer, and cases do arise where, despite our most careful analytical efforts, we are unable to arrive at a definite diagnosis. Even exploratory laparotomy may leave the question undetermined and the ultimate decision must rest with the microscopist or with time.

In these problem cases it is surprising how often a painstaking clinical study will enable us to arrive at a definite and correct conclusion. Nothing that will help us in our analysis should be neglected. In this connection I would state that the value of a careful history cannot be too strongly emphasized. If properly directed with due attention to details it will often enable us to identify the predominant type of pathological change that is going on in the stomach. Now that we are rapidly learning that the old assumption that the majority of gastric cancers begin in patients who apparently had no previous gastric symptoms is erroneous, and that, on the other hand, patients that give long histories of ulcers or gastritis very frequently ultimately develop malignant changes, we must bear these fundamental facts in mind and direct our inquiries along these channels. We should, however, not drag our investigation out at too great a length. This applies particularly to those cases in which there is at least a fair expectation of malignancy. To wait too long with these, is to wait too late. At times, despite most painstaking investigation we will have to fall back upon presumptive evidence plus our clinical experience or intuition, to enable us to come to a definite decision. Unfortunately this decision does not always mean exact diagnosis. Quite the contrary, we often have to content ourselves with the classification of the case in question into a surgical or a medical category. By this I mean whether it is fair to proceed with internal treatment or to advise operation, and, incidentally, I would say that when we have chosen the latter course we must stand firmly by our decision. Only then can we do what is right by our patient and our own sense of responsibility.

Like everyone else engaged in the practice of this field of medicine, I have had frequent opportunity to see these types of cases, and wish here to report a few which will serve to illustrate and emphasize what I have already said.

## CASE REPORTS

*Case No 1* Indefinite long ulcer history, recent cancer history, diagnosis made from history and X-ray examination. Operation and recovery.

C L, age 67, seen in November 27th, 1917, claimed to have always been well until two weeks ago, when, without apparent cause, he suddenly vomited sour fluid three times in one day. To day again he vomited with a very slight amount of blood. Since two weeks there has been almost constant epigastric heaviness increased by food ingestion, with sitophobia. There have been no pains, but constant nausea, weakness, slight dizziness, pallor and loss in weight.

Careful questioning elicits a history of very rapid and excessive eating, of frequent sour belching for many years and the avoidance of fried and sour foods and pastries. Two years ago, following a heavy dinner, there was a sudden, short attack of unconsciousness with immediate recovery. Since then, on and off, there have been slight attacks of dizziness.

Examination showed a large framed man, moderately anemic and looking somewhat worn. General examination otherwise negative, the abdomen was soft, flabby and somewhat pendulous, the liver border was easily palpable, but of normal consistence, otherwise, excepting slight point tenderness in the duodenal-pyloric regions. These findings were subsequently confirmed by Doctors Lockwood and A. A. Berg.

The stools were negative to occult blood, the stomach tests showed no obstruction. In the fasting state no contents could be obtained, a test breakfast yielded 5i, with free H Cl 22, total acidity 34, no lactic acid, no occult blood, microscopically negative. Our X-ray examination showed the stomach to be normal in position, size and shape excepting a constant irregular filling defect at the pylorus with rapid emptying of the opaque meal. The "cap" was filled and normal. The radiological diagnosis was chronic ulcer at the pylorus, with probable carcinomatous changes.

As this conclusion coincided with my own clinical diagnosis, operation was urged. This was carried out by Dr. A. A. Berg on December 19th, 1917. A very large callous ulcer, too indurated to be benign was found on the lesser curvature very near the pylorus. A total resection with posterior Murphy button gastro-enterostomy was done. Microscopical examination of the border and base of the ulcer showed the presence of an adenocarcinoma.

The patient made a good recovery and has remained in excellent condition to date.

This case illustrates how a large chronic ulcer may exist for many years and give rise to very slight symptoms and show the value of careful

history taking, the importance of investigation in cases of periodic clinical hyperacidity, and, finally, the benefit of abstaining from futile medical therapy in cases that are definitely suggestive of early malignancy. The syncope two years ago may have been due to a hemorrhage.

*Case No. 2* Case of chronic ulcer, long ulcer history, recent cancer history, palpable tumor, resection.

Mrs. E. C. S., 51, married, one child, seen March 2, 1912, referred by Dr. Van der Smissen.

Aside from the stomach conditions, has a moderate cystic goitre, chronic endocarditis and a rather large single uterine fibroid.

*Digestive history* For many years patient has had frequent short attacks immediately or a few hours after meals, epigastric pressure relieved by belching of tasteless gas or sour fluid, often nauseated after meals. Two or three protracted periods of marked epigastric burning relieved by medicine. Weight fluctuates since one year.

*Present troubles* Since about six weeks there has been constant nausea, no vomiting, constant epigastric pain only slightly relieved by food, and a constant sensation of fullness from the epigastrium to the throat relieved by soda bicarbonate. Despite a ravenous appetite patient is losing weight. Two weeks ago and last night brought up rather large amount of bright, red blood.

*Physical examination* Slender, pale, highly emotional. Has a mitral regurgitant murmur. The abdomen is soft, relaxed, has thin walls, and contains a fair sized, easily palpable, single uterine fibroid. One finger's breadth above and slightly to the right of the umbilicus is a circumscribed, hard, nodular mass about two inches long and freely movable and slightly tender.

*Laboratory tests* Fasting test yielded only 3 ss of brownish yellow alkaline fluid, showing a few meat particles. One hour after test meal, 3 v, with few blood streaks, solids 3 m, brownish yellow, mushy, and poorly digested. Absence of free hydrochloric and lactic acids. Total acidity, 24, few gross and microscopic meat fragments. Stools negative for occult blood.

*Diagnosis* Probably carcinoma with chronic ulcer, operation advised. Operated few days later, at the German Hospital, by Dr. George Semken. A freely movable and well defined tumor found near the pylorus, few glands on lesser curvature, tumor, including pylorus, resected, stomach and duodenal wounds closed, posterior gastro-enterostomy. The tumor was two inches long, showed few external changes but was mostly made up of a shallow, round, indurated ulcer, only one part of which showed cancer.

*Pathological report* Tumor, adenocarcinoma, gland, inflammatory hyperplasia.

*Comment* Patient is still alive six years after operation and perfectly free from stomach symptoms. This was a very early case of resectable carcinoma. The ulcer portion of the history was characterized by chronicity and periodicity, the characteristics being a repetition of identical gastric symptoms, especially periodic burning, sour belching and ravenous appetite, and general well being between the intervals. The carcinomatous indications were a change from periodicity to constancy of symptoms, a continued loss of weight, subacid stomach contents, and, finally, the hard tumor. Hematemesis is of course common to both conditions.

*Case No. 3* Long ulcer history, very recent suspicious cancer history, palpable tumor, operation.

Mrs. S. D., age 58, widow, referred July 27th, 1915, by Dr. E. Danziger. The family history is interesting in that three members of the immediate family had died of some form of cancer. Patient, herself, had a total hysterectomy for fibroids ten years ago. *Gastric history* Many years, frequent epigastric pressure and pain after meals, especially after fried and sour food and raw fruit. Often belched sour and often awakened at night with gastric distress and vomiting of the evening meal in a very acid state. Never treated for this acidity.

*Present history* Since six weeks, has had a dull and gnawing pain beginning about three hours after meals and relieved by food, is losing appetite and has disgust for food though not afraid to eat, almost everything disagrees, has frequent belching with odor of decayed eggs or else very sour, frequent water brash, two weeks ago vomited several times a few hours after meals, undigested and extremely sour food. Blood was never observed in the vomitus or stools. Has lost about twenty pounds recently.

*Examination* Well nourished, good color, very hysterical, abdomen soft, bulging, evident ptotic type. In the right epigastrium there is a small, elongated, hard, freely movable tumor, not tender or nodular.

*Stomach test* Refused fasting test. One hour after a test breakfast four ounces of stomach contents were aspirated. These showed three layers, the uppermost consisting of thick, frothy mucus, while the lowermost one, microscopically showed a moderate amount of meat and much barley from the previous evening meal. Microscopically, there were present meat fibres and many sarcinae, but no lactic acid bacilli. Free HCl = 8.0, total acidity, 54, lactic acid was absent.

The X-ray failed to show any direct signs of ulcer or carcinoma, there was, however, a marked six hour residue and it was concluded that this was due to a tumor mass external to the stomach pressing upon the pylorus.

**Diagnosis** Chronic gastric ulcer with induration, possibly intra- or extra-gastric malignant growth. Immediate operation was advised and performed by Dr F Torek, at the German Hospital. An extensive carcinoma, in the body of the stomach, was found. A gastric resection with posterior gastro-enterostomy was carried out. The patient lived eight months after the operation.

**Comment** The history was very suggestive of chronic ulcer with recent changes—either in inflammatory tumor or malignancy. With only six weeks of carcinoma history one would not expect a growth of such proportions. This case illustrates how a change from periodicity to continuity of a downward, progressive type, with or without a palpable tumor, should arouse strong suspicion of malignant changes and lead us to urge immediate surgical interference.

**Case No 1** Chronic callous ulcer of the lesser curvature penetrating into the left lobe of the liver with beginning carcinomatous changes, and very unusual X-ray picture. Successful resection.

Mrs F J, age 54. Seen in consultation with Dr A D Mayer, October 25th, 1917. Always of a very emotional temperament, menopause nine years ago. For very many years she has had mild symptoms of hyperacidity without definite pain, only heartburn. Since three years these have become more pronounced, particularly sour belching of gas or fluid with mucus. Diagnosed and treated then as a gastric neurosis by a gastro-enterologist. Periodic improvements and general well being until last spring, when, following a severe mental strain, the gastric symptoms returned associated with sudden, weak spells with great depression and weeping. In particular, she had a continuous pain under the left breast which seemed to be connected with her stomach symptoms.

Stomach analysis then showed total acidity of 15. A second examination a few weeks later showed 45, with some blood mixed with contents. Thread test, negative. Gastric symptoms improved very much during the summer spent out of town. Although patient found she had to keep an anti-acid diet. Weight was practically always stationary. After her return to town in the fall the gastric symptoms became more pronounced so that patient has been most of the time in bed. Dr Mayer who believed that the case was one of chronic ulcer, felt suspicious of a beginning malignancy. He requested me to see the patient with him. She is well nourished but anemic and very weak. The abdomen was relaxed and negative to examination, excepting that there was an area of distinct tenderness even to the slightest pressure in the left epigastrium a little below the left costal arch. The

feces were negative to occult blood. Only a fasting test was made and this showed no food retention. Our X-ray examination proved extremely interesting. It showed a rather large active stomach, with a good sized constant pouch-like projection on the lesser curvature, which in the oblique position was demonstrated to be directly connected with the stomach. There was no six hour residue. Our Roentgenological diagnosis was that of a penetrating ulcer of the lesser curvature. Subsequent examination by Dr E W Caldwell gave similar plates and the diagnosis of either penetrating ulcer or an anomaly in development. The existence of a malignant condition was not mentioned.

In view of the above data the diagnosis of chronic indurated penetrating ulcer of the lesser curvature with probable adhesions and possibly carcinomatous changes was made. I advised against medical therapy, and urged operation. The malignant factor was suggested by the clinical features of the case. The patient was operated on November 7th by Dr Willy Meyer at the German Hospital. A large indurated ulcer of the lesser curvature, penetrating into the left lobe of the liver and surrounded by a dense adherent inflammatory tumor was found. One portion toward the pyloric end appeared suspicious of carcinoma upon gross examination. Microscopical examination of this part showed adenocarcinoma. Despite the extent of the tumor mass a resection with gastro-enterostomy was successfully carried out. Up to the present time the patient has been doing very well.

**Comment** (1) This case teaches that we must not be misled in dealing with highly neurotic individuals to ascribe all their complaints to the nervous system, (2) the necessity of not placing too much dependence on laboratory findings, (3) the value of the X-ray in the diagnosis of stomach deformities, and the futility of placing too much dependence upon this method for the early diagnosis of cancer, (4) the importance of abstaining from medical therapy in ulcer condition that clinically appear definitely surgical, and (5) the great value of skillful surgery in cases of this kind.

### Conclusions

1 The clinical relationship between chronic gastric ulcer and gastric cancer is one that must be recognized.

2 In clearcut cases the differential diagnosis between chronic gastric ulcer and gastric cancer should present no difficulties, provided due attention is paid to the history taking and the results of the established methods of examination.

3 Difficulty will always present itself in very atypical cases when the patient is in the cancer predisposed age.

4 In those very early cases of malignancy associated with chronic gastric ulcer which have no cancer histories, and negative objective signs and gross operative findings indicative of cancer, it is of course impossible to establish the presence of malignancy excepting through histological examinations

5 When in doubt as to the exact diagnosis, a definite attempt should always be made to place the case into a medical or a surgical category. In the latter class, unquestionably belong cases with long standing ulcer histories which show recent changes from the original type to one of downward progression

6 Cases diagnosed clinically and operatively as cancer, not infrequently ultimately prove to be of a benign character. In many cases a very carefully conducted clinical study would have established the correct diagnosis

7 I would place the clinical methods at our disposal for the differential diagnosis between chronic gastric ulcer and gastric cancer in the following order of their importance

(a) *Chronic callous ulcer or early cancer* History—X-ray—objective examination—Laboratory findings

(b) *Advanced cancer* History—Laboratory findings—objective examination—X-ray examination

### Discussion

DR JOHN A. LICHTY, Pittsburgh I think Dr. Basch has brought out the very pith of the matter in this question of carcinoma and peptic ulcer. The fear in my mind is not that the peptic ulcer, which I have diagnosed, may become malignant, but the fear is that my diagnosis hasn't been right and that what I thought was a peptic ulcer was, after all, carcinoma from the first. Dr. Basch has brought out very clearly his indications which should lead us in the right direction in making a diagnosis. I am very glad that he mentions the history as of first importance. It is certainly an important point to teach the students and young physicians. The definite time of onset and the gradual progression of the symptoms are quite significant.

I think, of course, in doubtful cases, the surgeon should be called. I heard it put in a striking way a few weeks ago—"under these conditions call a surgeon but don't let him operate." I wouldn't wish to put it quite so strong as that, but in those cases where an ulcer is suspected, call a surgeon at once, but don't operate because you have an ulcer which you think may become malignant.

DR MAURICE PACKARD, New York City I feel very strongly as Dr. Lichty does about the

so-called relationship between ulcer and carcinoma. I have often wondered if ulcer was the predisposing factor of cancer. Why cancers did not result from varicose ulcers of the leg? I have never seen carcinoma follow such an ulcer. I have also often wondered, if ulcer was the great predisposing factor in cancer, why it is that after typhoid fever you do not have carcinoma of the intestines? This is indeed a very, very rare condition and I believe the relationship between gastric ulcer and cancer, has not certainly been proved. There is no question in my mind that there are other factors in the cancer of the stomach, besides that of the ulcer, which have not as yet been disclosed.

Why is it, as I have stated before, that cancer of the lung most often occurs on the right side?

So far our cancer knowledge has been a sort of a negative one. Our research men have disproved a number of supposed etiological factors but as yet they have not produced any positive facts about the origin of this lesion.

DR SEYMOUR BASCH, New York City I agree thoroughly with what Dr. Lichty said, viz., that we do not know the definite relation between carcinoma and ulcer, and also with what Dr. Packard said, but must repeat that my paper did not deal with the pathological connection at all.

What I wanted to discuss was only the clinical relationship. Pathological relationship is a problem that international investigators have been studying for years, but the question is still one of active controversy. The most plausible explanation of the infrequency of carcinoma of the duodenum is the protective influence of the alkaline duodenal secretions and, on the other hand, the hyperacid stomach secretion has been used by many to explain why carcinoma supervenes upon unoperated gastric ulcer. We seldom hear of a carcinoma occurring after gastroenterostomized gastric ulcer, even of the worst type, probably owing to reflux of the alkaline intestinal secretions through the new opening. The important point, however, as Dr. Lichty emphasized, is not to wait too long when you feel there is a definite change in the history, especially when this change is sudden.

To differentiate between carcinoma and chronic ulcer is difficult, and at times clinically impossible. Then, too, syphilis, as has been pointed out, can produce similar pathological and X-ray pictures of both carcinoma and ulcer, and very often the differentiation can only be made through the results of treatment or through pathological examination.

I would like to ask Dr. Lichty whether his carcinomas were primary or whether they had ulcers as bases. He reports cases of the carcinoma of the duodenum and if they were all primary, he is unusually fortunate in having encountered such frequent cases of this sort, for

the cases of carcinoma of the duodenum which I have seen, were secondary either by extension from the pylorus or from the papilla and not primarily in the duodenum. I should like to know whether Dr Lighty had diagnosed primary carcinoma in any case that he operated on, and if so, would he tell us how he made the diagnosis of primary carcinoma of the duodenum, and was the diagnosis verified not by operation but by pathological examination? We know how often the surgeon believes it operation the case is one of carcinoma and how very, very frequently the diagnosis is refuted by the pathologist or the subsequent history of the patient.

DR JOHN H. LIGHTY, Pittsburgh: I shall answer briefly the question as to primary carcinoma and carcinoma secondary to peptic ulcer. The pathologist reported the lesion as primarily carcinoma and I did not question it. The cases reported with carcinoma in the pyloric ring were also reported by the pathologist as primarily carcinoma.

One case was neither operated upon nor autopsied, and yet the symptoms were plainly carcinoma of the ampulla.

One case was operated upon but not autopsied and the excised pylorus contained a carcinoma.

Dr Packard in closing brought out a most important point. It is peculiar that ulcer in this part of the body—the dark cavity of the stomach not open to direct inspection—should be singled out as being likely to change from a simple to a malignant form when such a change does not occur in other parts of the body where the ulcerative process is plainly visible and open to inspection. Is it not probable that the carcinoma supposed to be planted upon an ulcer, were primarily carcinomatous. My paper does not pretend to give sufficient evidence upon which to base a conclusion in so important a question, it simply shows what was observed in the cases reported.

## THE INCIDENCE OF PEPTIC ULCER AND CARCINOMA IN THE DUODENUM\*

By JOHN A. LIGHTY, M.D.,

PITTSBURGH, PA.

IN a review of 445 cases of gastric carcinoma by Wilson and McDowell (*American Journal of Medical Sciences*, Dec 1914, page 796) 399 had been studied from tissue taken by the surgeon during the operation and 46 from tissue at autopsy. They concluded among other points that gastric cancer rarely occurs

except on the site of a previous ulcerative lesion of the mucosa. It is presumed that the "ulcerative lesion" referred to by the authors is the same as that of peptic ulcer. This conclusion has come to the clinician with a great deal of force, because, as he has become better acquainted with the frequency of peptic ulcer in the stomach and in the duodenum, he has appreciated the seriousness of his responsibility if he allowed his patients to go along without any more radical procedure than medical treatment affords. The internist has found himself in about the same position as the gynaecologist was when he learned that an erosion of the cervix or the scar tissue of a laceration may be the seat of future development of carcinomatous tissue. However, there is this difference: the gynaecologist could bring this tissue to view, inspect it, excise a section for examination and then perform a safe operation if the tissue proved to be malignant or leave it to be examined later if it was benign, whereas the internist can neither see nor palpate the peptic ulcer, much less can he excise tissue for examination before he decides upon a most radical operation. It has left the internist to almost the only alternative and that is to recommend for excision all peptic ulcers as soon as they are definitely diagnosed, and no one knows better than the surgeon how difficult it is to make a definite diagnosis of this lesion before the abdomen is opened. The discussion going on in the literature, over this question, while it has not brought out any unanimity of opinion, has at least served to call the serious attention of physicians as well as the laity to the necessity of looking for the early signs of ulcer and carcinoma, especially of the stomach. Such propaganda work is sometimes necessary in medicine as well as in other causes, but we should never sacrifice the facts as they are observed and correlated to the extent that they will lead away from the exact truth. It is with this point in mind that I wish to discuss briefly a few observations with reference to this question which have come to me with considerable emphasis during the past few years.

In this discussion I do not wish so much to refer to the history of the development of our knowledge in regard to these two lesions in the duodenum, but rather to call your attention on the one hand, to the present acknowledged frequency of duodenal ulcer and, on the other hand to the infrequency of cancer in this same region.

It is interesting, however, to note that cancer of the duodenum was first described by Ham-burger as early as 1746, since which time the lesion has been found only occasionally. Ulcer of the duodenum was first mentioned in medical literature in 1817. In 1830 it was possible to collect only five cases from the literature, and

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 23 1918.

in 1894—only 25 years ago—a thesis by Collins (Paris) contained a summary of 257 cases recorded to that time, and notes of additional five cases observed by him. At present almost any clinician who sees a number of gastro-intestinal cases can number his duodenal ulcer ones by the hundreds. It is interesting to note, therefore, that while carcinoma of the duodenum has been known for almost two centuries it is now seen scarcely more frequently than when it was first described. Of 808 cases of cancer of the intestine collected by Nothnagel, and others, only 42 or 45 per cent were of the duodenum, and of cancers in general, statistics show that only about 0.34 per cent occur in the duodenum.

Ulcer of the duodenum, popularly known, we might say for only twenty-five years is now the most frequently recognized lesion in the gastro-intestinal canal—even more frequently than ulcer of the stomach. This was first shown by the Mayos and has since been confirmed by many observers.

In reviewing my own cases I have found but six cases of carcinoma of the duodenum, and about 240 cases of carcinoma of the stomach—a ratio of one to forty. These diagnoses of gastric carcinoma have largely been verified by autopsy or operation. When neither autopsy or operation was done the diagnosis was confirmed by the inevitable course of all cancer cases. The six cases of cancer of the duodenum were all confirmed by operation or autopsy with the exception of one in which autopsy was not permitted. The diagnoses in all the cancer cases are, therefore, reasonably certain.

Reviewing over 1000 cases of peptic ulcer, collected during the same period in which the cancer cases were collected, I find a diagnosis of ulcer of the duodenum 480 times whereas ulcer of the stomach was diagnosed 540 times. While in these statistics one cannot feel so certain of the diagnosis of peptic ulcer, and especially as to whether in the stomach or duodenum, as of the diagnosis of carcinoma, the figures have some significance. It may be inquired why ulcer of the stomach was reported slightly more frequently than ulcer of the duodenum, since nearly all clinicians agree that just the opposite is the case. In my earlier work X-ray examination and string tests were not available or even known and it was difficult to make the diagnosis of the presence of an ulcer, not to speak of its definite location. It was only after visiting the Mayo Clinic, some ten years ago, that I appreciated the fact that duodenal ulcer does occur and that many of my so-called hyperchlorhydrias, which formerly had been considered as cases of gastric neuroses or gastric ulcer, were cases of duodenal ulcer. Since then, with more careful histories and with the aid of the X-ray, the Ein-

horn string test, and other procedures, the diagnosis of duodenal ulcer has been made more frequently, and probably now two out of three cases of peptic ulcer are found in the duodenum.

My experience in this is not unique, for in 1904 the relation of recognized gastric ulcer to ulcer of the duodenum was

In

1904, Gastric Ulcer, 73%, Duodenal Ulcer, 27%
1907, Gastric Ulcer, 52%, Duodenal Ulcer, 48%
1910, Gastric Ulcer, 35%, Duodenal Ulcer, 65%
1914, Gastric Ulcer, 27%, Duodenal Ulcer, 73%

Though my ulcer statistics may not be so reliable as the cancer statistics, they show that duodenal ulcer occurs at least as frequently as gastric ulcer, and that there is not the same discrepancy, one to forty, as there is in carcinoma in these two divisions of the gastro-intestinal tract.

Another interesting observation of this study was the location of carcinoma in the duodenum. It is a well known and recognized fact that carcinoma in the stomach is distributed in relative frequency to various parts of the stomach about the same as peptic ulcer. In other words, the location of gastric cancer corresponds rather strikingly to that of gastric ulcer. In the duodenum, according to reports found in the literature and according to my own reports, this similar distribution does not occur. According to Moynihan at least 95 per cent of peptic ulcers lie in the first portion of the duodenum or within one and a half inches of the pylorus. The farther the distance from the pylorus the less frequently is ulcer found. It is unusual to find an ulcer near or about the papilla of Vater.

It is possible to find but few satisfactory reports in the literature of cases of carcinoma of the duodenum located exactly in the most frequent ulcer bearing area, i.e., within the first one and a half inches of the gut. Most reports seem to be of growths which come directly from the pyloric ring or immediately from or about the papilla of Vater. This fact is confirmed very strikingly in the six cases of cancer of the duodenum which I shall report. None were found in that area which is most frequently the seat of peptic ulcer, before the excision two were thought to be in this area, but were shown by the pathologist to be in the pyloric ring and simply dipped down into the first portion of the duodenum, three others were shown to have come from or about the ampulla of Vater, and the sixth, which was not operated or autopsied, corresponded so closely and definitely in history, symptoms, and clinical findings to the other cases of carcinoma of the ampulla that it was included.

In reporting these cases I shall refer only to the autopsy findings, or the observations in the operating room as it is the pathology only which concerns us in this presentation

Case No 1 Mr H A F aged 42, Feb 1911, was operated upon for pyloric stenosis, due to a carcinoma. The pylorus, with the first portion of the duodenum, was resected. It was thought during the operation that the carcinoma had its origin in the first portion of the duodenum but the pathologist, Dr Klotz, demonstrated definitely that the growth came from the pyloric ring

Case No 2 Mrs J D C aged 62, Oct 1910, was operated upon for gall stones and possible carcinoma of the gall-bladder. Forty stones were found, one impacted in the common duct which was enormously distended. On account of the extensive infection the patient died several weeks after the operation. Autopsy performed by Drs Klotz and Hathorn showed "a carcinoma involving the duodenum at the entrance of the bile and pancreatic ducts. The condition was complicated by gall stones causing stagnation of the bile in the ducts and in the liver while the pancreatic fluids distended the pancreatic duct to the formation of cysts"

Case No 3 Mr E H A aged 56, March 1911, was operated upon for pyloric stenosis, possibly malignant. A tumor as large as an English walnut lay in the first portion of the duodenum having its origin seemingly, in the pyloric ring. A gastro enterostomy was done. Five months later the patient died. An autopsy was not permitted and, therefore, this case may be somewhat in doubt

Case No 4 Mrs E C aged 67, May 1916, was operated upon for empyema of the gall-bladder and possible stone in the common duct. Pus was found in the gall bladder. The common duct was obstructed not permitting a probe to pass into the duodenum. At the autopsy a carcinoma was found at the papilla

Case No 5 Mr N J H aged 57, May 1917, was intensely jaundiced and septic. Died two weeks after entering the hospital. At the autopsy a primary carcinoma of the ampulla was found the proximal side of the papilla having been destroyed by the growth

Case No 6 Mr C L M aged 68. This case should probably not be included in this list but the symptoms were identical with those of case 5 and the physical findings were the same. Gastro analysis was, free HCl O, combined 6, and total 12 no blood and lactic acid. A silk string was blood stained in the bile stum. Opera-

tion was refused. The patient died in two months and no autopsy was permitted

In summing up this data it appears

First—In a series of 486 patients with duodenal lesions six were found to be cancerous and 480 were benign ulcers—a ratio of one to eighty

Second—In a series of 780 patients with gastric lesions 240 were found to be cancerous and 540 were benign—ratio of one to two and a fourth

Third—In the duodenum the cancer usually had its origin either in the pyloric ring (twice) or at the papilla of Vater (four times), whereas, according to Moynihan 90 per cent of the ulcers are in the first one and a half inches of the duodenum. Apparently then, the cancer bearing areas and the ulcer bearing areas do not coincide in the duodenum as they do in the stomach

From these facts we must necessarily conclude thatasmuch as duodenal ulcer is more frequent than gastric ulcer, and duodenal cancer decidedly less frequent than gastric cancer, andasmuch as the distribution of the two lesions coincide in the stomach but do not coincide in the duodenum, it would appear highly improbable that peptic ulcer is an etiological and determining factor in carcinoma of the stomach. Or to express the matter in the form of a question. If carcinoma of the stomach arises so frequently (50 per cent-70 per cent, according to some) from a peptic ulcer why doesn't carcinoma occur more frequently in the duodenum where peptic ulcer abounds? Is it not probable that the etiological and determining factor of carcinoma of the stomach is something entirely independent of peptic ulcer? These are questions which come to the clinician and appear difficult to answer. It may be that the anatomist or the physiologist or the biological chemist has a ready and satisfactory answer

### Discussion

DR NATHAN W SOBLE, Rochester. I consider myself fortunate in having had the pleasure of hearing Dr Lichy's paper on this subject, because it has to do with the old controversy between the clinician and the surgeon as to the treatment of peptic ulcers

I wish to be understood as having in mind both duodenal and gastric ulcers. After an experience of twenty years in this work, of endeavoring to make diagnoses of gastric and intestinal ulcers and advising treatment I have come to the conclusion that the bugbear of carcinoma in duodenal ulcer does not really exist. I am not afraid of my patient developing a cancer in the seat of the duodenal ulcer hence in advising the treatment I don't allow that to weigh very much in my opinion

The contrary is true in peptic ulcers. In a report of fifty cases of authentically proved ulcers of the duodenum, proved by all sorts of tests and by operation, some of which have been under observation for a number of years, I cannot report one single case of primary cancer of the duodenum. There were some cases of cancers that the surgeons wanted me to believe had started in the duodenum. They were distinctly cancers involving the duodenum, and there were two cases of cancers of the jejunum. They were attended by the customary signs of obstruction at the pylorus and involving the liver and gall bladder. The whole matter is a question of early diagnosis. Mr. Munyon has said that he can diagnose ulcers of the duodenum by correspondence. I don't think it is quite as easily done as that. The symptoms are very misleading. The symptoms of gall bladder trouble and the symptoms of many other disturbances of the abdomen are sometimes similar to the symptoms of duodenal ulcer, and since we know that ulcers of the duodenum are so very frequent, compared to our previously formed ideas, why I feel that in the management of the cases it is the element of early diagnosis and the length of time that the ulcer has existed that counts. In the case of a man past forty, with a history of repeated attacks of gastric disturbances, with well-marked signs of obstruction, if our diagnosis points to a cicatricial, so-called callous ulcer, the treatment is surgical.

But what I would like to emphasize is this. That I don't think we ought to be influenced by the fear of cancerous degeneration of the duodenal ulcer in our advice as to the course to be followed in the management of all cases.

## SURGERY VS RADIUM IN THE TREATMENT OF CARCINOMA OF THE BLADDER

By BENJAMIN S BARRINGER, M D,  
NEW YORK CITY

**I**F I were briefly and bluntly to state my opinion as to the relative value of surgery and radium in curing carcinoma of the bladder, I should say if surgery could cure 15 cases in 100, radium could cure 20 cases. This is my thesis.

Certain peculiarities of the bladder itself, and of bladder carcinomata, have been responsible for the far from brilliant results of surgery. The bladder is an empty viscus, somewhat inaccessible to and difficult of surgical approach. The hardest parts to reach, surgically, are the bladder neck and trigone where 8 of 10 bladder tumors are situated. Further complicating matters are the

ureters emptying at the trigone and often invaded by the growth. The bladder is in constant motion, either filling with urine or being emptied, which complicates the healing after operation rather than the operation itself. These are the difficulties which surgery has, on the whole, been rather unable to overcome. I say this because, considering its life history and pathology, carcinoma of the bladder should be among the most favorable of all carcinomatas to cure.

Roughly, carcinoma of the bladder presents two types: the papillary type, growing into the bladder, and the flat, indurative type, extending not into the bladder, but through the bladder wall and thence outward. The papillary type has the one outstanding peculiarity that it does not readily invade the bladder wall and may be confined to the bladder for years. In an autopsy specimen at Bellevue Hospital we found a bladder so completely filled with papillary carcinoma that it held only a dram of urine. There was absolutely no metastases in any other part of the body. The flat, indurative carcinoma, on the other hand, is a good deal more malignant and very much more quickly and readily invades the bladder wall. Combinations of those two types are to be had. Compensating for the greater malignancy of the indurative type, is its comparative rarity, probably 9 of 10 cases being papillary carcinoma.

Turning to the symptoms, there is no other internal organ which so constantly puts out a danger signal of carcinoma, that is hematuria. Most bladder tumors bleed, and bleed early, and this is a symptom which may be immediately appreciated by the patient. Men almost always appreciate the importance of hematuria. Women only too often confuse it with uterine bleeding, and pay no attention to it. Again, no other internal organ can be so readily and completely examined as the bladder. It can be palpated suprapubically, its base, where most tumors originate, can be felt rectally, a very thorough examination may be made of its interior by means of the cystoscope, and pieces of tumor may be excised for examination.

In treating bladder carcinoma, radium has a distinct advantage over surgery. The physical peculiarities, not only do not obstruct the treatment, but rather help it. Under radium treatment the bladder usually does not have to be opened, the radium may be placed more or less accurately upon the tumor and left there. The fact that the bladder fills up with urine acts as a screen to normal parts of the bladder. I shall not dwell upon the application of radium in these cases, suffice it to say that we are steadily working toward a more accurate application of radium to the tumor. As to untoward results, I have had a number of radium burns, different bladders have different sensibility to radium. I have a general impression that the bladder from

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 23, 1918.

which springs papillomata is considerably more sensitive than the carcinomatous bladder. When burns occur they are very painful, and last for some months. I believe that better technique will result in practically no burns.

Since October, 1915, at the Memorial Hospital, I have treated 43 cases of carcinoma of the bladder. I have not included in these 43 cases any of pure papilloma. There have been 2 cases of so-called malignant papilloma, and the rest papillary carcinoma, or indurative carcinoma, or a combination of the two. In a majority of my cases the diagnosis has been confirmed by the microscopical examination of pieces of the tumor. In an earlier paper I have gone into the cystoscopic diagnosis and the microscopical findings in these tumors and shall not repeat that before this Section. Suffice it to say that the cystoscopic and rectal examinations are more important than the microscopical examination in the diagnosis, that the microscopical examination should be made in every instance, that the harm caused by excising small pieces of the tumor through a cystoscope is largely mythical and that the information so gathered is of vast importance in the proper treatment of bladder tumors and should never be neglected. I believe the cystoscopic examination, and the examination of an excised piece of the tumor, are sufficient for a diagnosis and are sufficient to plainly indicate the best treatment. Older methods of diagnosis, that is, fulguration of a tumor for a long period of time to determine the reaction of the tumor to fulguration and so its malignancy is, I believe, a distinctly bad practice.

In this paper I shall not give the complete statistics of all the cases treated. I shall rest my case with the presentation of the abbreviated statistics of the cases which we have cured as far as the bladder is concerned.

Two of the entire 43 (5 and 9) cases were early operable cases, these cases have been too recently treated to report upon. Some of the remaining 41 cases might have been called operable the operation would have to be partial or total cystectomy. On the whole, operation on these 41 cases would have presented but slight chance of cure.

Five of the 41 advanced cases (cases 1, 3, 4, 6, 7), and 1 a post operative case, 3 confirmed microscopically are well, as proved by cystoscopic examination, 1 for 23 months, 1 for 12 months, 1 for 6 months, 1 for 7 months and 1 on one examination. In 2 cases (cases 2 and 5) the tumor has recurred after being removed.

† Many of the cases are dead. Many of the cases came to us practically dying. The one thing radium does in the hopeless cases is to control the hematuria. In 9 of 10 cases the bleeding stops—generally for a period of some months. This is the decided benefit that follows radium treatment in bad cases. Whether it temporarily checks the growth of the tumor is an open question.

(by radium) from the bladder. Three or four more cases of the 43 will probably later go into the cured euplun.

It is on this record of 5 cases cured, as far as the bladder is concerned for various periods of time, that I base my claim for the efficiency of radium treatment in carcinoma of the bladder. A detailed history of the above 7 cases is as follows:

*Case No 1—C A G—Age 69 Dec 1, 1915*  
Chief complaint pain after urination and frequency one year (night 3-4 times, day every 3-4 hours). Bloody urine since summer. Cystoscopy shows large cauliflower red (with small patches whitish necrotic mass) mass with base as long as 50 cent piece on left side bladder, over left ureter orifice. Specimen for pathological examination by Dr Ewing reported "carcinoma."

Jan 19, 1916, 100 m c radium (screened) in bladder Jan 4. In 8 hours. Went home next day. Three days after, had pain for 2 days (after urination), urinating every hour.

Feb 4, tumor all gone! Ureter in plain sight and covered by normal mucous membrane. Two pedunculated papilloma from 11 o'clock, of bladder neck. Dr Keyes saw bladder, nothing done.

December 19, large white scar over left ureter, probably as large as a 25 or 50 cent piece. Reduplication of left ureter (back of it). No tumor anywhere!

January 24, 1918, cystoscopy today. Bladder normal. Lost 10 to 15 pounds, because of stomach trouble. Advised to come in and be looked over.

*Case No 2—C T—Age 59 February 11, 1916*  
Eight months before being seen had occasional painless hematuria. Cystoscopy revealed papilloma near the left ureter. This was burned with the high frequency current four times in about six months, but had always recurred. Dr Keyes saw it in January, 1916, when it was an ulcerated area with carcinomatous looking lumps. A piece removed was thus described (by Dr Ewing): "The section is from a mass of tumor tissue 5 mm in diameter. It presents a small alveolar and diffuse carcinomatous structure. The cells are extremely atypical, and some are of very large size, with very hyperchromatic nuclei. The outer portions are hydropic, the central areas show fibrosis, and here the tumor cells run in narrow rows or small groups."

February 11, 1916 214 mc. of screened radium were inserted for seven hours.

May 2, cystoscopy revealed normal mucous membrane over the space occupied by the carcinoma. The patient had had seven or eight erections since treatment while he had been practically impotent for ten years before.

In July he had gained 10 pounds Cystoscopy (by Dr Ballenger) was negative

November 8, Dr Ballenger reported that he "had passed no more blood Cystoscopy about a month ago showed only a reddened place where the growth was There has been a rather persistent cystitis"

May, 1917, cystoscopy showed recurrence of bladder tumor and much induration of base of the bladder (rectal examination)

*Case 3—E J S—Age 54 July 6, 1916* Chief complaint, hematuria since July, 1915 Lost no weight Cystoscopy shows grapelike, red, sloughy, in small area carcinoma around bladder neck Vaginal examination shows induration of anterior vaginal wall as large as a silver dollar, 116 m c (2 tubes) in bladder neck six hours Specimen shows papilloma

October 30, without symptoms Weight 123 in July, now 140 Not up at all at night Cystoscopy shows slightly irregular urethral orifice and a distinct nipple at 1 o'clock, covering normal mucous membrane Bladder trabeculated and white leukoplakia spots on base *Tumor gone!* No induration of bladder base per vagina 100 m c radium six hours

October 17, 1917, no tumor in bladder

*Case 4—L M—Age 70 October 21, 1914* Occasional slight hematuria since February Large red papillary tumor left side bladder vault Several small tumors elsewhere and some about ureter Several small ulcers General condition good Suggest six weeks or more fulguration for trial

October 24, tumor left of trigone well burned, small ulcerated one to right partly burned One burn given large mobile tumor, base of which not seen There are others

November 12, burned again Now two ulcers Great deal of diffuse papillary infection of base and left side of bladder Vaginal touch revealed adhesions with induration above, from rectum can feel large mass in region of cervix

October 2, 1916, alternate hematuria and frequency and painful urination all summer Tumor at bladder neck is extending over trigone Find new one in midline of fundus Take specimen Dr Ewing reports "carcinoma" To Dr Barringer for radium

October 10, 200 m c radium in tube in urethra seven hours

November 23, right side trigone acute infection and velvety One c m in diameter, sloughy One tumor seen, raspberry, not pedunculated, not sloughy, growing from bladder neck at about 4 o'clock (B says looks like red cauliflower) No induration by vagina

January 3, 1917, radium burn persists Tumor at bladder neck smaller Fulgurated

March 15, 1917 Burn well, small papilloma back of left ureter Nothing at bladder neck General cystitis and swollen mucosa Still ulcer extending to right ureter and behind this something which is granulated or tumor

June 17, 1917 Holds urine all night No symptoms Cystoscopy reveals normal bladder

January 1, 1918 *Bladder entirely clean!* No symptoms Well and has traveled South and West

*Case 5—H F R—Age 68 June 25, 1917* Chief complaint frequent and painful urination Night eight-nine times Four years ago hematuria Pain and frequency two years Night seven times Weight 120 Lost 17 pounds Hematuria one year and irregularly since Prostate normal Cystoscope shows large, extensive, sloughy, lobulated tumor right side bladder base General mild cystitis

August 27, July 3, had 2 x 50 radium in bladder eight hours No bleeding since Night, four, five times Weight 119½ pounds Bladder pains before and after radium Pains gone Feels stronger

October 26, no bleeding at all Weight 125½ pounds Day four-five times Cystoscopy in June showed slight papilloma at bladder neck Specimen taken showed papillary carcinoma malignant Cystoscopy today—*normal bladder mucous membrane* Slight irregularity around left lateral lobe prostate Prostate normal

April 18, 1918 Has *white sloughy mass* back of left trigone and same kind of mass above where bladder touches lower mass Undoubtedly recurrence No induration by rectum Advise radium

*Case 6—S R G—March 27, 1917* Operated upon for papilloma of bladder, which has recurred I find a papillary, sloughy growth of right side of bladder base Gave two tubes 50 m c radium six hours in bladder neck

July 1, 1917 Dr Smith reported bladder clean

*Case 7—I H P—Age 63 November 21, 1916* In July, 1916, frequent painful urination First hematuria twenty years ago Again August, 1916 Symptoms continue Now bin and every three hours with occasional brief diurnal frequency Pain less Cystoscopy shows two tumors, one very pedunculated and apparently necrotic, the other like small pink berry Just above internal urethral orifice large flat bunch of soft papilloma

April 24, 70 m c screened radium four hours July 7, no bleeding six weeks Not up at night

December 5, 1917, tumor probably gone July 7, when Dr Keyes and I cystoscoped him No bleeding since September 1, 1917 Looks well Up twice at night Few "radium" blebs left bladder neck *No tumor!*

## WAR A SCHOOL OF SURGERY\*

By STEPHEN SMITH A M MD, LL D

NEW YORK CITY

WE live in the most remarkable period of the authentic history of man on this planet. The whole world is atone with human strife. Everywhere and at all hours of day and night we hear the call and see the devastation of war. Every inquiry and conversation of man with man on whatever subject always includes an anxious allusion to the progress and prospects of the war. It was the practice of the Romans to have the beginning of war announced throughout the imperial city by sentinels in these expressive words "Bellum bellum horridum bellum!" We can realize the terrible shock which these few words produced on the citizens of Rome.

No human being the world over, whether civilized or savage can escape the personal inquiry "What message does this call of war bring to me?" Whatever answer men in ordinary pursuits may conscientiously make, the members of the medical profession who are bound to respond to the every call to relieve human suffering and by every possible means to conserve human life will sacrifice every other interest in an immediate effort to arrest this wholesale destruction of men, women and children by inconceivably barbarous methods.

It is exceedingly gratifying to record the fact that in all of the Allied nations the medical profession has promptly answered the demand for its services, and in many instances local communities have been deprived of proper medical care. And not less gratifying is the report that larger classes of students than heretofore are entering the medical colleges of this country. This latter fact gives abundant evidence that the appeal of this war to the common instinct of humanity is receiving a cordial response from the young men of the country about to choose a profession.

It has occurred to me that this occasion might appropriately be devoted to a consideration of the relations of war to medicine as an art and a science. Such a discussion may be very helpful to students about to graduate in determining their future course.

Hippocrates, the founder of scientific medicine taught his pupils that war is a school for perfecting surgeons in the manual or operative branch of surgery. He therefore recommended graduates to have a term of service in the wars of the time as a kind of post-graduate course. The experience of centuries, ancient and modern has confirmed the wisdom of that advice.

Looking backward, it is interesting to notice that surgery probably had its origin in the tribal wars of primitive people as illustrated by their wounds.

We assume this to be a fact from the instruments first employed, viz., the knife and the forceps the knife with which to incise and the forceps with which to seize and remove the foreign body, which was the broken end of a spear, lance, arrow or other rude weapon.

Bars, the eminent historian of medicine says "The first medical services were of a surgical character," and Garrison, our own excellent authority, adds "The earliest surgical instrument (the knife) was in all probability not the specialized leaf-shaped flint of 'celt,' but rather some fragment unusually sharpened as to edge and point by accidental flaking."

This chipped stone knife was of great antiquity, according to Professor Osborn (125,000 years), and represented a complete cycle of human development of a prehistoric people in Central Asia. There are two references to the surgical use of this "chipped knife." It is written in the Book of Exodus, iv 25 "Then Zipporah took a sharp stone and cut off the foreskin of her son." In the Book of Joshua, v, 3, we read "Joshua made himself knives of flint and circumcised the children of Israel."

The second instrument required by the primitive surgeon was the forceps with which to remove the foreign body. The ingenuity displayed in devising forceps to meet every possible emergency illustrates the peculiar tendency of the Oriental mind to objective rather than subjective studies. An ancient authority thus describes the various forms of forceps in use "They ought to be about nine inches long, their mouths should be respectively like those of a lion, tiger, wolf, hyena, bear, elephant, cat, hare, antelope, crow, heron, dog, jay, vulture, falcon, owl, kite, cock, crouch, the bee, rat, mouse or bullock each half being united to the other by a nail of the form of a lentil seed, being bent inward at the handles like the elephant drivers hook. These forceps are recommended for the extraction of splinters lodged in bone. The lion-mouth forceps is for foreign bodies that can be seen while for covered ones there are the heron forceps and others of its kind. These should be used gently the foreign body being removed in accordance with surgical principles. The heron forceps is the best of all forceps since its use never leads to accidents. It enters easily and is very easily drawn back. It has a firm hold on splinters and removes them easily."

Homer describes two operations in the wars of his time in the performance of which the surgeons employed the knife and forceps. He also

\*An Address delivered at the opening of the Session of the College of Medicine of the Syracuse University October 6 1918

mentions two sons of Esculapius—Machaon and Podalius—as army surgeons

"Machaon was summoned to remove an arrow which was driven through the belt of Menelaus, King of Sparta, he extracted the arrow from the well-fitted belt, but while it was being extracted the sharp barbs were broken, then he loosed the variegated belt and the girdle beneath and the plated belt which brass workers had forged, when he perceived the wound where the bitter shaft had fallen, having sucked out the blood, he skillfully sprinkled on it soothing remedies (Garrison).

"Euiypylus, wounded with an arrow in the thigh, calls upon Patroclus to remove it. Patroclus, laying him at length, cut out with a knife the bitter, sharp arrow from the thigh, and washed the black blood from it with warm water. Then he applied a bitter, pain assuaging root, rubbing it between his hands, which checked all his pains, the wound indeed dried up, the bleeding having ceased" (Garrison.)

We obtain a very correct idea of the surgeon's "kit" and his use of instruments at the close of the period known as "Antiquity" from the following account of a contemporary author

"A surgeon contemplating to operate in any of the above ways should first have ready the following blunt instruments (forceps, etc.), sharp instruments, potential cauteries, catheters, horns, leeches, a dry gourd, a cauterizing needle, stuffing materials, strings, board, bandage, honey, ghee, fat, milk, oil, soothing decoctions, injections, lotions, fan, cold and warm water, a frying pan, able, steady and attached servants. During the operation let the patient be seated, who has taken very little food, offered sacrifices and made ablutions, with his face toward the east. The surgeon should stand with his face toward him and plunge his instrument after the proper incision until matter comes out, and withdraw it, avoiding vital parts, vessels, muscles, articulations, bones and arteries. Boldness, rapidity of action, sharp instruments, operation without trembling, fear or doubt, are always praiseworthy of the surgeon"

From these historical facts we learn that the wars of the primitive people of Western Asia led to a high degree of development of the art of surgery, that is, its manual or operative practice. Naturally, these improvements resulted in its application to a great variety of diseases. Baas says "Operative surgery attained such a position among the Indians that they did not shrink from the greatest and most difficult operations" Garrison states that "the Hindus apparently knew every important operative procedure except the use of the ligature"

But with the orientals surgery remained an art, not a science. It was not until its practice

reached Greece and was studied as a philosophy that we have surgery perfected as a science and an art. At that period Greece excelled all preceding nations in its intellectual adaptation to lay the foundations of the art of surgery on a scientific basis. Baas says "The Greeks incorporated into their own culture original portions of the primitive civilizations, they raised these foreign elements at once to an extraordinary perfection and development, whatever they touched intellectually, or incorporated from without, they purified, elevated and refined, the simple knowledge of these primitive peoples they developed and elevated into the liberal sciences, the stereotyped, mechanical forms of the former became, under their hands, a genuine art; the Greek mind strove always for the profound and entire and was not contented with knowledge of facts alone in medicine, but ever sought the inmost essence, aim and object, a knowledge of disease in itself rather than of individual species of disease and their peculiar phenomena"

It was fortunate for the further development of scientific surgery that its oriental practice was to be subjected to the tests of Greek philosophy, and it was especially fortunate that the inductive method of research was to be applied by one of the greatest figures in human history—Hippocrates (460-370 B. C.). His life was cast in the golden period of Greek art and philosophy. He was a contemporary of the period of Socrates, Plato and Aristotle, of Herodotus and Thucydides, of Sophocles and Euripides, of Pericles and Demosthenes. He was the son of a physician and had the education of the schools of the period, he practised his profession during a widespread epidemic and became famous, he traveled extensively and was a careful observer, he was a teacher of medicine and gave to the school at Cos its great reputation. His writings exhibit a mind trained to close observation, to the judicious discrimination between the true and the false; to exact expression, and, above all, to a synthetic or orderly arrangement of subjects and details.

At the famous school of Cos, made famous by the teachings of Hippocrates, the art of surgery as transmitted by the Egyptians became also a science as the outcome of the application of the inductive method of analysis and synthesis to the accumulated facts and experiences of the past centuries. Greek medicine, now an art and a science, began to be taught in the schools of Greece, practical medicine in the temples where the sick gathered for treatment and practical surgery in the wars of the period.

The Christian epoch influenced the evolution of surgery in two important particulars, viz (1) It consecrated the scientific spirit, which the epoch of Hippocrates created, to the sacred duty

of conserving human life and relieving human suffering from the highest possible motive, the recognition of the basic principle of Christianity—the fatherhood of God and the brotherhood of man—and (2) it preserved the records of the experience of the centuries past inviolate and encouraged the study and practice of surgery, many of the “fathers of the Church, even bishops becoming eminent practitioners. Walsh says “The Church’s first grave duty was the preservation of the old records of literature and science. Fortunately the monasteries accomplished this task.” But the Church not only carefully preserved the literature of surgery, but it published from time to time important works embodying practical and essential matter gleaned from former writers.

It was through the graduates of the great school of Salerno (1000) that Greek medicine, somewhat modified by the Arabic and Jewish elements in its faculty, spread to the schools of Western Europe and through those of England and Scotland to our own country. Throughout all of these centuries of progress it is noticeable that the Hippocratic declaration, “War is a school of surgery,” was a conspicuous feature in the final training of the graduates who became famous in their profession.

Though American surgery was originally a transplantation of British surgery to a new and virgin soil by the American graduates of its London and Edinburgh schools, our three first medical colleges were established by the enterprise and foresight of veterans of the War of the Revolution. Dr. John Warren of Boston, founded the Harvard Medical College. Dr. John Jones of New York, founded the College of Physicians and Surgeons. Drs. Morgan and Shippen, of Philadelphia, founded the University Medical College.

Every great war of the past has been followed by a very large increase of new and valuable methods of procedure, a higher grade of practice in all branches and an elevation in the ideals of education and professional ethics. This was markedly true of the effects of the Civil War. As a teacher of large classes of both students and practitioners in Bellevue Hospital clinics during and after the war, I had abundant opportunities to notice the effects of a term of active service in the army on graduates of the schools of the city and practitioners from rural localities. In numerous instances the improvement was marvelous, especially in the practice of surgery. One of my students who seldom answered a question correctly closed his army service as an expert operating surgeon.

Another student who would have adorned the medical practice of a small village was persuaded to enter the army, from which he retired as surgeon general.

Recent reports prove that no war has offered such opportunities to the medical graduate to become familiar with the practice of high grade surgery as does the American surgical service in the present war. A competent surgeon has made a personal investigation and makes the following remarkable statement:

“Of the wounded who live long enough to be carried off the field of battle, 90 per cent recover. Of those who reach the casualty clearing stations and hospitals of evacuation, 95 per cent get well, and I have visited base hospitals in both France and England which have handled tens of thousands of cases, with a death rate of less than 1 per cent. Of all the wounded who recover, 80 per cent are back on the firing line in forty days, and 40 per cent within twenty days.”

I trust this brief sketch of the relations of war to the medical art will raise the question in the mind of every student, “What do you advise me to do?” My answer is the same as that I gave to hundreds of students in the years 1861-1864, “Enter the army as soon as possible.”

Dean Hefron, you are a teacher of medical students, an enviable but very responsible position, enviable because teaching is so instructive to the teacher and responsible because, as Mr. Erichsen said, “the method of doing things is transmitted directly from the master to the pupil.” Hence the teacher creates in his pupil habits of practice which are peculiar to himself. This effect occurs especially in clinical teaching, where the knowledge acquired in the class room is applied at the bedside.

During half a century it was my duty to teach clinical surgery in Bellevue Hospital to large classes, and the present occasion reminds me of my efforts in the first sessions to teach the simple art of properly examining a patient. I was accustomed to give each student a patient whom he was to examine alone, write a complete account of his findings and bring the patient before the class. He was then to read his history and fully explain every detail. The class was invited to criticize the report freely, and when they had concluded I reviewed the report and pointed out its errors.

The first and most difficult lesson to impress was the method of examination of the patient. My directions were to examine him as the lawyer examines a witness. Compel him to answer questions only until you have acquired all the facts necessary to your diagnosis and then allow him to add any facts that he thinks necessary.

The object of the lesson was to prevent the student falling into the pernicious habit of many physicians who make their diagnosis from the misreading talk of the patient who is allowed to describe and comment on his symptoms. The

famous Quaker physician, Dr. Physic, of Philadelphia, compelled his patients to answer his questions without comment. A wealthy lady patient to whom he had applied this rule went to his office one morning determined, as she stated, to tell him what was the matter. She said "Dr. Physic, don't I pay thee good fees?" "Very good," the doctor replied. "Well," she said, "I have never been allowed to tell thee what is the matter with me, and I have come this morning determined to tell thee." Taking out his watch, he inquired, "How long will it take thee?" She replied, "Only fifteen minutes." "Very well," he said, "Go right on and I will step around the corner and visit a patient meantime."

I found it such a serious task to induce students to base their diagnoses on their personal examinations that I made the following test of the unreliability of the patient's description of the symptoms of his disease. I selected a patient on whom I could rely to give three entirely different histories of his case, with instructions to relate one of these histories to each of the three students, who would call separately upon him. The students selected did not know that any other students were on the case.

The test came when the patient was brought before the class and the students were called upon to read their histories in turn. The amazement of the three diagnosticians at the ludicrous and ridiculous position in which they were placed before a jeering class was never forgotten. Years after I received letters from members of the class stating that this clinic had been more useful to them than any event in their college education.

Another lesson taught at the clinic was the importance of avoiding technical terms in giving directions or in explaining symptoms to persons of ordinary intelligence. A student much given to the use of technicalities was given in charge of an Irishman and in his report of the case recommended the application of a blister plaster to his abdomen. Seeing the opportunity of enforcing my lesson, I said to the patient, "Remember the doctor's direction to apply the plaster to the abdomen." On his return at the next clinic he was asked how the blister worked. He replied "That on the 'ab' didn't amount to much, but that on the 'domen' drew like hell."

The attitude of the physician in apparently hopeless cases must always be hopeful, for marvelous recoveries occur when the patient's courage is sustained by assurances of recovery. On the other hand, patients die of trivial diseases when they are not encouraged. Many illustrative cases of these facts occurred in my clinic and were the subjects of instruction. An elderly man was admitted, as he said, by direction of his physician to die at a given date. The only disease discoverable was inflamed rheumatic joints

of his fingers, but nothing could divert his mind from the date fixed for his death, and he died accordingly. It should be added that his physician was noted for his prediction of the date of death of patients, and a sufficient number did die, like this man, to confirm his reputation for accuracy of prognosis. But it is equally true that the greater number did not die, but long outlived the doctor himself.

In striking contrast was the following case. The patient was from the slum district and in profound collapse from a shot directly over the stomach. In consultation it was decided that the stomach had been so damaged that no operation should be performed and that he should be given sufficient opium to relieve pain. His only thought was how he would lick Dick King when he recovered. The students in charge were directed to encourage him in the belief that he would recover, which they did effectually. The arrival of the coroner to take his ante-mortem statement aroused him and he asked the coroner what he wanted of Anna Mordum. On being informed that he wished to get the facts in his case in order to arrest his assailant, the patient, with a volley of oaths, ordered the coroner not to "butt" into his business. After several days of general peritonitis he began to recover and was finally discharged cured. On visiting the hospital several months later I saw a rough-looking man on the other side of the street who called, "Hello, Doc, don't you remember me?" I replied that I did not recognize him. "Well," he said, "I'm the feller who was shot in the stomach and got well cause you and your students stuck to me like good fellers. I want to tell you that Dick King will never shoot anybody again. And now can you tell me where that feller is who wanted Anna Mordum so badly, as I would like to get a shot at him for butting into my business."

Students of medicine, it is fortunate for you that the old-time professor of my student days has passed from the lecture platform, which he so long graced in evening dress, with gold-bowed spectacles and well-conned manuscript. He was as unapproachable by students as a deity, and his long-drawn sentences as unintelligible to the average student as the Choctaw language. Now the student meets his teacher at the threshold, clad in his work-day dress, receives a hearty handshake and a cordial invitation to consult him whenever he is in need of aid or advice.

Equally fortunate for you is the remarkable privilege of studying and practising your profession in the golden era of scientific medicine and surgery. When I began study in 1848 the stethoscope was a novelty, microscopes were few and of little power and diseases were known by the name of the organ, as lung, heart, liver, kidney, disease. In therapeutics the favorite remedy

was the "shotgun prescription," consisting of ten or more crude drugs and recommended as sure to kill something. In surgery, operations were performed without anaesthesia and I still have most painful recollections of the struggles and screams of patients held on the table by the strong arms of attendants while the operator stood with knife poised in the air watchfully waiting an opportunity to cut twice in the same place. He dressed the wound so as to promote the outflow of pus. To do this is all chrified. The diagnosis determines the exact part of the organ affected and the treatment is limited to the single remedies which alone will effect a cure. In surgery the operator clad in immaculate linen sits at his ease by the table, and with delicately gloved fingers pursues his dissection on an insensible and perhaps, bloodless limb. He applies his aseptic dressings once for all, and when he removes them after many days he finds no stain of pus but the wound completely healed. Meantime the surgeon sees his patient gaining in strength, and when the final dressing is made is discharged cured.

I am reminded in this closing sentence of the greeting of an incoming class of medical students by the famous London surgeon Abernethy, who from his humble home in Scotland had attained by incessant labor to the highest position in his profession in the British capital. Amazed he entered the lecture room at the crowd of students he paused, and probably recalling struggles in his early professional career raised his hand and said "Gentlemen, my God Almighty have mercy on you."

We can give you no doubtful welcome to this University College of Medicine. There is no profession that to day is more promising and inviting than that of scientific medicine and surgery. The whole world is, and for a score of years will be, calling for qualified physicians. And never have the facilities for acquiring a thorough medical and surgical education compared with the present. I have been personally familiar with the course of instruction in this college and can assure you it tallies rank with the foremost medical schools of this country.

But let me say to you that there is no royal road to success. Great as has been the advance of the sciences and remarkable as they have been in mitigating the primal curse—in the sweat of thy face shalt thou eat bread—they have failed to discover a method by which a student may sleep in the class room and inhale knowledge or saunter idly in the hospital wards and become an expert in diagnosis. Whatever dreams you may have indulged in of acquiring an adequate medical education without incessant labor should to-day be dismissed. Let your motto be that given by Hippocrates to the students of the school of Cos: "Life is short, art is long the occasion fleeting."

## NOTES ON THE EPIDEMIC OF TYPHUS FEVER IN RUMANIA

1916 1918

By R H RULISON, M.D. Capt., Am Red Cross

**R**UMANIA at the close of the Balkan wars in 1913 contained 138,000 square miles (53,489 square miles)—approximately the size of Arkansas, a little larger than New York State, a little smaller than Illinois.

The outline of the country is that of a reversed letter "L", the northern and western boundary is formed by mountains—to the north by the Carpathians to the south by the Transylvanian Alps. These mountains are pierced by nine passes, four of which are traversed by railways connecting Rumania with Transylvanian Austria. Seventeen per cent of Rumania is wooded most of the timber being found in the mountains.

The land south and east of these mountains is flat and extremely fertile. Twenty-nine per cent of the total area is under cultivation. The river Danube flows through the southern part from west emptying into the Black Sea, which, for a short Russian limits Rumania on the east. To the south lies Bulgaria. The country is divided historically into two parts, Wallachia forming the southern three-fourths and Moldavia the northern one-fourth.

Aside from extensive oil wells and salt mines Rumania's only industry is agriculture, over 80 per cent of the population is engaged in farming.

When Rumania entered the war in August, 1916 she had a population of approximately 7,500,000 92 per cent of whom spoke the Rumanian language. The foreign residents were mostly Jews, Greeks, Armenians and Turks. The density of the population was fifty-four per square kilometer.

The country has compulsory military service the army having a peace strength of 103,460 men and a war strength of 290,000. After the beginning of the great war the army was rapidly increased so that in August, 1916 it was said to consist of 700,000 men, counting first and second line men. (This is probably a high estimate.)

Following the plan laid out for them by the Allies, Rumanian troops marched through the mountain passes and invaded Transylvania, whose population Rumania claims forms racially a part of Rumania. This left the Bulgarian border poorly guarded, but Russia had agreed to send a powerful army through southeastern Rumania to attack Bulgaria. The Russian army was three months late however the delay being ascribed to treachery in the Russian high command. This delay enabled Bulgarian and Turkish troops to attack from the south and Austro-Germans from the west while a large part of the Rumanian army was in Transylvania. There

was much incompetence and some treachery among the Rumanian officers and this, with Russia's delay in sending her promised support led to the outflanking of Rumania's forces and in December a costly, disorganized retreat followed, which was halted only on the eastern bank of the Sereth River after the mountain passes and all of Wallachia, the richest part of Rumania, had been occupied by the enemy.

The retreat was disastrous. About 200,000 of the army were missing, most of them having been made prisoners, while large stores of grain and army supplies together with almost all the oil wells were either destroyed or fell into the hands of the enemy. The tardy arrival of the promised Russian aid checked the steady advance of the enemy but also added to the congestion of the population and the scarcity of food.

The Russian authorities had promised to send in enough food to supply their own forces and in addition 300 cars of food per day for the Rumanians, but because of the wretched railway facilities or, because of treachery they not only failed to keep their agreement but actually took much of Rumania's slender supply of food for their troops. To add to the troubles of the unfortunate Rumanians an unusually severe winter set in early, the Austro-Germans kept up a more or less steady offensive and epidemics of typhus exanthematicus and recurrent fever began.

At the beginning of the winter of 1916-1917 the situation in Moldavia was roughly this. Into an area of 36,567 square kilometers having normally a population of slightly more than 2,000,000 had come 800,000 Russian troops, probably 150,000 refugees from Wallachia and the remainder of the Rumanian army, about 450,000 men, increasing the density of the population from fifty-four per square kilometer to ninety-three. This occurred in a comparatively short time with no increase in housing facilities, many of the troops being quartered in houses with the owners until barracks could be built.

Typhus fever, according to most authorities, is endemic in all the Balkan states and in certain parts of Russia, but the Rumanian physicians deny that the disease was known in Rumania before the war. It had, however, raged in Serbia in 1915 following the Serbian retreat and resulted in a mortality of 160,000. It had also become common in all the neighboring countries so that it is easy to understand how it was introduced into Moldavia by Austrian, Bulgarian and Turkish prisoners and by the Russian troops, and how it was almost immediately transmitted to the civilian population by the quartering of troops in their homes.

If it is true that typhus was unknown in Rumania before the war, its absence can scarcely have been due to the existing hygienic conditions. The Rumanian peasant is an exceedingly dirty

person, and bathing facilities in a Rumanian village are almost non-existent. If you ask one of these peasants whether he has lice he will probably look at you in surprise and say "Am I dead that I should not have lice?" Cockroaches and bedbugs are common even in pretentious homes, and are looked upon as necessary evils. The railway coaches, hotels and public buildings are never properly cleaned.

The classical conditions requisite for an epidemic of typhus fever were therefore exactly reproduced—over-crowding, filth, lice, exposure, starvation and lowered vitality.

It should be said that the Rumanian authorities were considerably awed by their Russian allies, who outnumbered them two to one and many of whom had already been campaigning two years when Rumania entered the war. The Russian organization, equipment and supply system were far superior to anything Rumania could exhibit and the officers were inclined to treat their small allies with good-natured contempt.

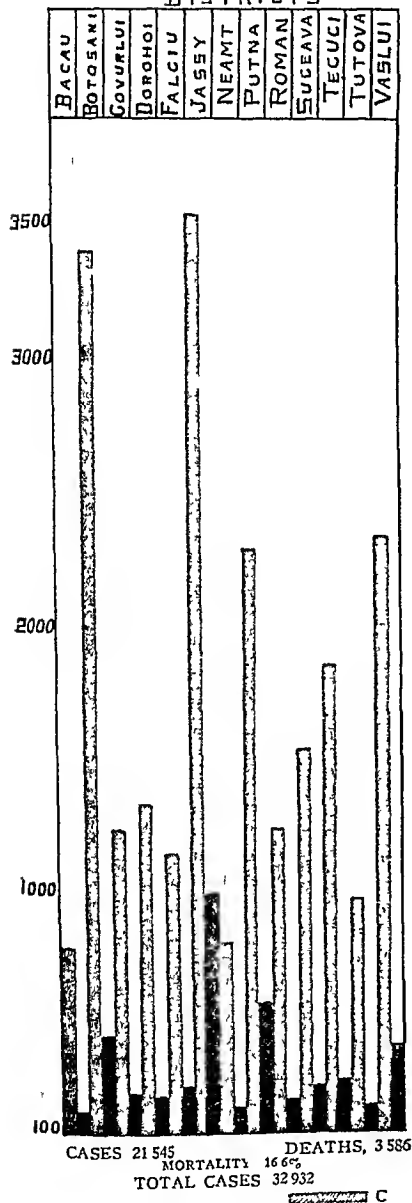
Soldiers, especially Russian soldiers, who have spent one or two years at the front get to be on intimate terms with lice and other parasites and have a considerable natural immunity to typhus. So when a Rumanian sanitary inspector in the course of his work reported to a Russian captain that his men were lousy and needed disinfecting the captain usually took the simplest way to avoid giving an unwelcome order by assuring the Rumanian that he had inspected his men that very morning and found them extraordinarily clean. The Rumanian learned by experience that it was best to accept this assurance at its face value. Meanwhile the Russian troops continued to shed lice throughout the houses where they were quartered.

After the Russian revolution, and especially after Kerensky issued to the army his famous general order No. 1, the Russian troops rapidly became unmanageable, and it was not until after the Rumanians had disarmed and forced them out of the country in the beginning of 1918 that the Rumanian authorities were in a position to enforce their regulations.

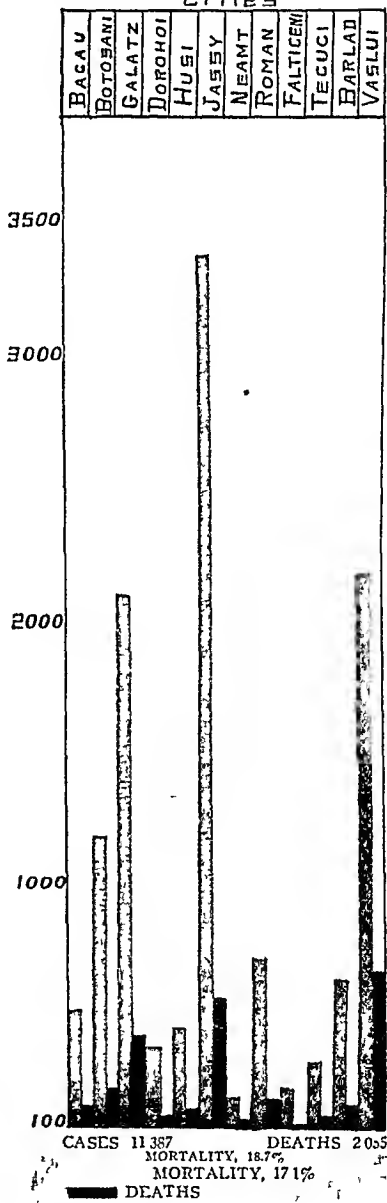
Typhus will be considered first in relation to the civilian population because the available data are more complete and possibly more accurate than those of the army. The disease first appeared in Rumania during the first three months of 1915 when forty cases occurred at Bucharest. These cases were attributed to infection brought into the country by Bulgarians. The incipient epidemic was stamped out and a rigid quarantine established which prevented the re-entry of the disease until November, 1916, when twenty cases with no deaths occurred in the city of Piatra. During the same month there was one fatal case in a village in the district of Bacau.

TYPHUS EXANTHEMATICUS IN 1917

DISTRICTS



CITIES



In December there were twenty cases reported from four widely separated districts with five deaths

During January, 1917, all but two of the thirteen prefectures or districts of Moldavia reported cases, a total of sixty-four, with thirty-four deaths. It is very probable that at this period of the epidemic many cases remained undiagnosed, as the disease was new to the Rumanian physicians and the country badly disorganized. No doubt this accounts for the high mortality shown during January.

In February all parts of Moldavia had either new cases or old ones still under treatment, the total number of new cases being 387 and the deaths sixty-one. During March the epidemic made rapid headway, there were 2,843 cases and 458 deaths. In March and April the virulence of the disease reached its high point, although the total number of cases was greatest in May.

There were 6,422 new cases and 1,609 deaths during April, and thereafter the disease took a milder form. In May 9,824 cases were reported with 1,520 deaths, showing a 60 per cent increase in the number of cases but an actual decrease in the number of deaths.

During June the number of new cases decreased—6,706 with a death total of 1,087. In July there were 2,396 cases and 476 deaths. In August there were only 942 cases and 120 deaths.

When the American Red Cross Mission arrived in September, 1917, we were told that the epidemic had about run its course and was under control. The records show 434 cases and thirty-nine deaths, the smallest number for any month since January. During October there was a slight increase, 458 cases and forty-three deaths. In November, with the beginning of cold weather, the curve again rose, there were 884 cases with a mortality of seventy-five. December showed a further increase—1,590 cases and 174 deaths.

In January, 1918 (January 13–February 13 by our calendar) there were 2,880 cases with 188 deaths. This is a much larger number of cases than occurred during the same month of 1917, but the mortality was lower 6.09 per cent.

Apparently the sanitary measures taken to limit the disease have not been altogether successful up to the present time. However, since the Russian army is no longer in Rumania and the virulence of the disease has decreased markedly it does not seem likely that the spring of 1918 will witness a repetition of 1917.

Among the civil population of Moldavia, then, during the period from November 13, 1916, to February 13, 1918, we have a record of 35,812 cases of typhus with a total mortality of 5,829, or 16.27 per cent. These figures are arrived at by combining the urban and rural statistics which for some reason are always kept separate. The mortality percentage in the cities was 18.7 per cent, while that of the villages was 16 per cent.

The difference is attributed to the great number of refugees and consequent overcrowding in the cities.

For example, the prefecture of Vaslui (2,294 square kilometers) has a normal population of 129,000 people living in fifty-three villages and the city of Vaslui. The city has normally a population of 9,000. During the winter of 1916–1917 it was increased to 30,000 by refugees, with practically no increase in housing facilities and with an actual decrease in the number of hospital beds available, since some of the hospitals had been taken over by the army. There were few refugees in the district outside the city.

So we find among the 30,000 crowded into the city of Vaslui 2,033 cases of typhus with 600 deaths, or 29.5 per cent, while among the 120,000 rural inhabitants there were 2,232 cases and 303 deaths, a mortality of only 13.58 per cent.

During our stay in Rumania I was able to visit both military and civil hospitals in eight of the thirteen sanitary districts and to accompany a very capable and conscientious official, Dr. Bordea of the civil sanitary service, on a thorough inspection of the district of Roman. Accompanying this report are charts showing the course of the various epidemic diseases in the city and district of Roman during 1917 and the first month of 1918, which brings the data up to January 13, our calendar. These statistics are the most accurate of any that I have, still they are far from correct.

An inspection of the death certificates in the peasant villages, and to a lesser degree in the cities, shows a remarkable monotony in the assigned causes of death and a very limited imagination on the part of the diagnostician. Almost every death after the age of sixty is ascribed to "debility," while all young children apparently die from "malnutrition." Deaths from grippé, pneumonia, enteritis and chronic diseases are conspicuously absent. It may be said in explanation that although a death certificate is necessary for a burial and while, in the cities, it must be signed by a doctor, in the rural districts the deceased's friends and the local sanitary agent are allowed to decide on a cause of death and fill out the certificate in the absence of the district physician. It seems probable that during the height of the epidemic of typhus and recurrent fever many cases were wrongly diagnosed.

Preceding and accompanying the typhus epidemic was an epidemic of recurrent fever. (In the Serbian epidemic, recurrent fever accompanied and followed the typhus fever.) Although the mortality in this disease is low under ideal conditions and treatment, and even in Rumania was lower than that of typhus, the total number of cases was so much greater (50 per cent) that the number of deaths from recurrent fever was almost as large as that from typhus. Of the two diseases the recurrent fever ran its

course more quickly, and during the time we were in Rumania almost ceased.

The statistics obtained concerning the prevalence of this disease among the civil population are much less complete than those referring to typhus, and are complete only to August 1, 1917. Out of 652 cities and villages in unoccupied Rumania, 489 were infected, having a total of 42,989 cases with 5,095 deaths showing a mortality of 11.9 per cent. During the same period 28,624 cases of typhus occurred, with 5,190 deaths, or 18.13 per cent.

The mortality in the cities from recurrent fever was 8.3 per cent, while in the villages it was 12.3 per cent. This reverses the comparative percentages found in typhus. A possible explanation lies in the fact that the most efficient treatment of recurrent fever is the intravenous injection of some arsenical preparation and this is beyond the ability of the ordinary sanitary agent. Many of the rural sick who were unable to procure the services of a doctor were attended by unskilled sanitary assistants. Also the supply of intravenous medical preparations at the disposal of the government during the height of the epidemic was limited and was more easily procurable in the cities than in the villages. It is interesting to note that in January, 1918 there were 486 cases with fifteen deaths, only 3.09 per cent.

The Rumanian hospital system in normal times is complicated by the work of two large charitable societies called "epitropia," which build and maintain hospitals. One of these societies, whose hospitals are all in Wallachia, has its headquarters in Bucharest the other, the "Epitropia St Spiridon" has its headquarters in Jassy and its hospitals mostly in Moldavia. These hospitals are under the general supervision of the civil sanitary service, but are to some extent independent. This results in some confusion in collecting statistics.

It is interesting to note the disposition made of some of these semi public hospitals after the retreat. The Epitropia St Spiridon controlled in addition to an insane hospital of 400 beds and a training school for midwives, fourteen hospitals in various parts of Moldavia having 882 beds. All but five of these hospitals were taken over by the military in whole or in part, leaving only 179 beds for the civilian population. This occurred in the face of an increase in the civil population already mentioned.

The civil sanitary service had in addition to these privately supported hospitals a number of government-maintained hospitals urban and rural in the different prefectures. Some of these were also taken by the army but by using other buildings and converting special hospitals into general hospitals this service was gradually able to increase the number of its beds, as is shown in the accompanying table.

HOSPITALS AND NUMBER OF BEDS CONTROLLED BY THE CIVIL SANITARY SERVICE OF RUMANIA

District	Number of Hospitals	Number of Beds 1916	Number of Beds 1918
Bacau	4	108	245
Boiostani	9	193	405
Covurlui	4	140	630
Dorohoi	7	144	350
Iasi	5	105	300
Iasi	4	82	360
Neamt	5	165	580
Roman	5	151	290
Putna	3	48	220
Suceava	4	81	200
Tecuci	6	150	430
Tutova	3	75	220
Vaslui	3	115	180
Total	62	1,557	4,410

This increase, however was accomplished only very gradually and under great difficulties and was accompanied by overcrowding and a disregard for the original purpose of the buildings that could hardly fail to result in the spread of communicable diseases from ward to ward. Even as late as March 1918, it was no uncommon sight to see two patients or a father or mother with two or three children in one bed.

In spite of the scarcity of beds the authorities found it wise to insist more and more rigidly on the isolation of all communicable diseases in hospitals in order to check the spread of the epidemics. Undoubtedly before the system of bathing shaving and petzolizing all patients and disinfecting their clothes on admission many persons contracted typhus after entering a hospital to be treated for some other malady.

The measures taken to fight the typhus epidemic are summarized by Dr Bordera as follows: "When the epidemic began the means of prophylaxis did not exist and the country was badly disorganized and contained many refugees. When the American Red Cross Mission arrived much work that had been planned was accelerated and new work inaugurated. At present in unoccupied Rumania there are 450 disinfectors and 400 baths between twenty five and thirty steam sterilizers of the portable variety are in operation. There are nineteen bath trains, but only six are in operation at present because of the fuel shortage."

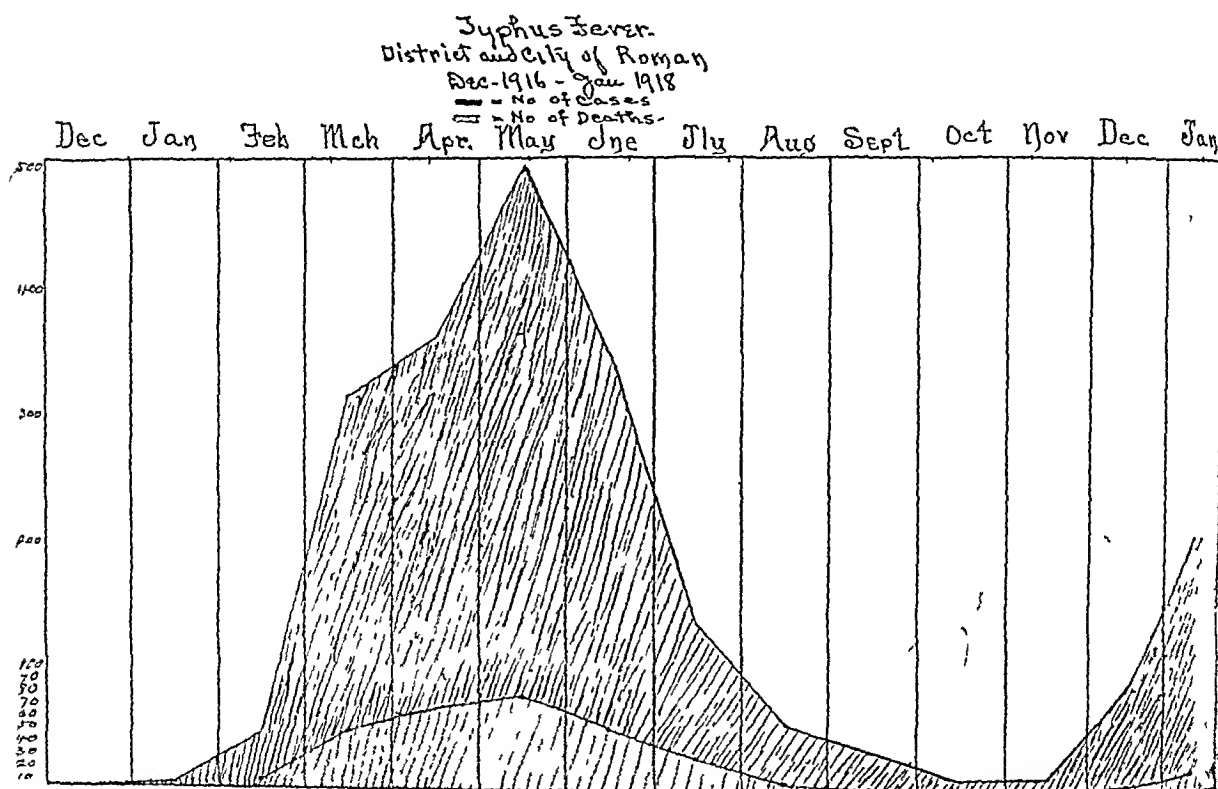
Dr Bordera is having built many small wooden disinfectors which are light enough to be moved from village to village on carts. In the prefecture of Roman, excluding the city of Roman, there were on March 1, 1918 forty one disinfectors and twenty-one baths either completed or nearing completion. In addition to these measures the inspection of schools, orphanages hospitals and private houses is being carried on with increasing thoroughness and the people educated in the importance of cleanliness.

The foregoing, with the accompanying charts, gives all the statistics available at present regarding typhus among the civil population of Moldavia. While incomplete, and at many points admittedly inaccurate, they are far better than could be obtained regarding typhus in the army.

Army reports cover two zones, the zone of operations (the front) and the zone of the interior. It was stated that as troops are trans-

ferred daily from the front to the rear and versa it was impossible to estimate the number of men in the two zones over any long period.

The typhus statistics of the zone of the interior, covering the period from January 1, 1917, to February 1, 1918, were obtained. They show a total of 40,266 cases and 8,095 deaths, a mortality of 20 per cent.



### THE EPIDEMIC OF TYPHUS EXANTHEMATICUS IN MOLDAVIA

NOVEMBER 1, 1916—JANUARY 31, 1918

District	Cases	Deaths	Capital Cities	Cases	Deaths	Total Cases	Total Deaths
Bacau	919	98	Bacau	425	76	1,344	174
Botosani	3,707	410	Botosani	1,107	150	4,814	560
Covurlui	1,262	176	Galati	2,203	374	3,465	550
Dorohoi	1,686	193	Dorohoi	367	40	2,053	240
Falciu	1,401	207	Husi	402	38	1,803	240
Jasi	3,487	920	Jasi	3,198	498	6,685	1,418
Neamt	839	108	Neamt	138	24	977	132
Putna	2,265	619	Putna			2,265	619
Roman	1,415	162	Roman	674	108	2,089	270
Succava	1,659	187	Falticeni	167	17	1,826	204
Tecuci	1,875	229	Tecuci	269	44	2,144	273
Tutova	1,082	111	Barlad	634	99	1,716	210
Vaslui	2,523	329	Vaslui	2,108	612	4,631	941
Total	24,120	3,749	Total	11,692	2,080	35,812	5,829
Mortality		15.50%					16.28%
General mortality, 16.28%					17.85%		

Note —The percentages given in page seven are correct to January 1, 1918. Correction of this table to February 1, 1918 (old style), reduces them somewhat as a result of decreased virulence of the disease.

## SANITARY SERVICE OF THE DISTRICT OF ROMAN

TABLE SHOWING THE COURSE OF EPIDEMIC DISEASES IN THE DISTRICT OF ROMAN FROM JAN 1 1917—JAN 31, 1918

Months 1917	Typhus Fever		Recurrent Fever		Variola		Typhoid Fever		Scarlatina		Cholera	
	Cases	Deaths	C	D	C	D	C	D	C	D	C	D
January			72	4			34		48	6	3	2
February	7		334	9			15		11			
March	90	10	70	2	2		9		7			
April	144	30	123	6	3		17					
May	388	50	213	34	22	8			18			
June	304	44	166	22	28	5	19		28	5		
July	107	20	65	3	2				18			
August	30	4	53	4	1	1			29	6		
September	28	4	8				34		24	3		
October	8	1			8	1	42		39	5		
November	10	1			20	7	57	9	35	6		
December	83	4	44	4	30	8	92	4	10	4		
1918												
January	201	15	26	1	62	9	66	7	17	4		
Total	1 400	183	1 174	89	178	39	385	20	284	41	3	2

## SANITARY SERVICE OF THE DISTRICT OF ROMAN

TABLE SHOWING THE COURSE OF EPIDEMIC DISEASE IN THE CITY OF ROMAN BY MONTHS JAN 1, 1917—JAN 31, 1918

Months 1917	Typhoid Fever		Recurrent Fever		Variola		Typhoid Fever		Scarlatina	
	Cases	Deaths	C	D	C	D	C	D	C	D
January*	3		114	1			18		12	1
February	36	5	50	2	4		14	1		
March	221	36	35		3		15	1		
April	214	33	10		3	3			1	
May	104	23	14		6	1	3			
June	43	5			3	1				
July	29	5	2				2		1	
August	23	3	2				9	2	8	1
September	4		2				13	3	2	1
October	2	1	3				17	4	14	2
November							21	4	2	2
December	3				1		8	1	6	2
1918										
January	3				3	3	3		8	1
Total	685	111	232	3	24	10	123	16	54	10

\*January figures include cases under treatment January 1st 1917

COMBINED TABLE SHOWING THE COURSE OF THE EPIDEMIC DISEASES IN THE CITY AND DISTRICT OF ROMAN 1917

1917	Typhus Fever		Recurrent Fever		Variola		Typhoid Fever		Scarlatina		Cholera	
	C	D	C	D	C	D	C	D	C	D	C	D
January	3		186	5	1	1	52	0	60	7	3	2
February	43	5	384	11	4		29	1	11			
March	311	46	105	2	5	1	24	1	1			
April	358	61	133	6	6	3	17		1			
May	492	73	227	34	28	9	3		18	2		
June	347	49	166	22	31	6	19		28	5		
July	136	25	67	3	2		2		19			
August	53	7	55	4	1	1	9	2	37	7		
September	32	4	10				47	3	26	4		
October	10	2	3		8	1	59	4	53	7		
November	10	1			20	7	78	13	37	8		
December	86	4	44	4	31	8	100	5	16	6		
1918												
January	204	15	26	1	65	12	69	7	25	5		
Total	2 085	294	1 406	92	202	49	509	36	338	51	3	2
Mortality	14 10%		6 54%		24 27%		7 07%		15 09%			

January figures include cases under treatment January 1st 1917

Total area of prefecture of Roman 2 091 square kilometers

Total normal population of prefecture 113 878

Density of population 54 45 per square kilometer

Total mortality, 1917, 12,535 Ratio, 1,100 per 10 000

## STATISTICS OF TYPHUS, RECURRENT FEVER AND SMALL-POX (CIVILIAN) IN RUMANIA FOR JANUARY, 1918

Place	Typhus		Rec Fever		Small-Pox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Bacau, City	4	0	0	0	2	0
Bacau, Dist	197	16	17	0	101	3
Botosani, City	8	0	0	0	0	0
Botosani, Dist	373	17	43	2	8	1
Galati, City	81	9	0	0	12	2
Covurlui, Dist	88	7	0	0	132	16
Dorohoi, City	68	8	0	0	0	0
Dorohoi, Dist	417	36	143	9	0	0
Husi, City	26	2	0	0	37	0
Falciu, Dist	325	16	70	2	176	13
Jasi, City	22	1	0	0	21	1
Jasi, Dist	12	1	2	0	3	0
Neamt, City	21	2	1	0	0	0
Neamt, Dist	109	11	103	1	30	2
Putna, Dist *	44	4	0	0	4	0 (Unoccupied part)
Roman, City	6	0	0	0	1	0
Roman, Dist	228	15	30	0	71	7
Falticeni, City	25	2	0	0	0	0
Succava, Dist	207	17	17	0	21	4
Tecuci, City	0	0	0	0	8	1
Tecuci, Dist	155	9	12	0	105	13
Barladi, City	36	1	0	0	27	6
Tutova, Dist	190	9	18	1	133	13
Vaslui, City	8	0	0	0	14	1
Vaslui, Dist	230	5	0	0	44	4
Total	2,880	188	486	15	950	87
Mortality		6 18%		3 09%		9 16%

\*The capital city of the district of Putna was held by the enemy

## ARMY STATISTICS—TYPHUS EXANTHEMATICUS

## THE EPIDEMIC IN THE HOSPITAL ZONE OF THE INTERIOR DURING THE PERIOD JANUARY 1, 1917—FEBRUARY 1, 1918

No	Districts	Cases Entering Hospitals		Total Mortality		Total Admissions	Total Deaths	%
		Jan 1, '17 Aug 1 '17	Aug 1, '18 Feb 1, '18	Jan 1, '17 Aug 1, '17	Aug 1, '17 Feb 1, '18			
1	Covurlui	2,584	361	446	44	2,945	490	
2	Tecuci	1,766	221	317	66	1,987	383	
3	Tutova	1,868	637	523	112	2,505	635	
4	Falciu	879	409	165	40	1,288	205	
5	Vaslui	2,734	570	600	66	3,304	666	
6	Bacau	3,959	489	1,053	114	4,448	1,167	
7	Roman	2,597	70	463	11	2,667	474	
8	Neamt	1,018	104	154	11	1,122	165	
9	Suceava	1,224	119	262	7	1,343	269	
10	Botosani	2,794	290	359	145	3,084	504	
11	Harlau	1,204	229	274	42	1,433	316	
12	Jasi	9,713	494	2,170	134	10,207	2,304	
13	Dorohoi	3,187	746	435	82	3,933	517	
Total		35,527	4,739	7,221	874	40,266	8,095	20%

The statistics of the zone of operations were still incomplete when the American Red Cross Mission left Rumania March 9, 1918. From a few known figures an estimate was made for me that about 17,000 deaths occurred from typhus in the zone of operations. Assuming a mortality of 35 per cent in this zone, which was thought to be approximately correct, it follows that there must have been at least 48,000 cases of typhus at the front. These figures are based on a known mortality in both zones from communicable diseases, including typhus and recurrent fever, of 33,000.

An examination of these figures, however, shows that they are probably inaccurate. In the civilian population the deaths from recurrent

fever were fewer than those from typhus in the ratio of 9 to 10. The estimate of 17,000 deaths in the zone of operations added to the 8,095 deaths from the same disease in the zone of the interior leaves only 8,000 deaths attributable to all other communicable diseases, including recurrent fever. It is improbable that this difference in proportion actually existed.

Probably a more accurate estimate would assign a total of 70,000 cases of typhus to the whole Rumanian army with not more than 20,000 deaths.

No figures are available as to the number of cases occurring in the Russian army in Rumania. It is known that the mortality was only 7 per cent, much lower than that of the Rumanian.

army. The disease is endemic in Russia and many of the troops were probably immune. This with their better physique, better food supply and better hospital facilities added to the lower sensitiveness of the nervous system of the Slav, probably accounts for their low death rate.

Combining the figures for the civil and military populations and not including the Russians it may be concluded that there were 106 000 cases of typhus fever among the Rumanian population of Moldavia up to February 13, 1918 with 26,000 deaths, giving an average mortality of 24.5 per cent.

If one adds to this number 23 000 deaths from wounds and a probable total of 20 000 deaths from other war diseases including recurrent fever, cholera, smallpox and the increase in deaths from typhoid fever and scarlatina attributable to the changed conditions of life resulting from the war it follows that among 2 600 000 people there occurred in the space of fifteen months 70,000 deaths which were directly attributable to the war.

## THE PROBLEM OF VENEREAL DISEASE CONTROL

By MAJOR A. N. THOMSON, MC USA  
NEW YORK CITY

THE problem of venereal disease control in the army is to all intents and purposes the same as in civilian life. Those of us who have entered the Medical Reserve Corps are finding in our army experience confirmation of the basic principles that we evolved in health department and clinic control of venereal disease during the past ten years. This in brief may be divided into education first, advice and diagnosis second, treatment third, and last but not least, follow up in every possible way.

Military discipline greatly expedites the application of all procedures for control both of the sources of infection and the treatment of the infected individual. During the past years a few civilian clinics and health departments have developed various methods of reporting venereal cases providing facilities for advice and diagnosis, investigating the sources of infection and establishing clinics for the specialized treatment required in order to maintain efficient control.

In following up to the bitter end the infected individual, various procedures have been tried and have met with a very considerable degree of success. In illustration of this point in the year 1912 the Brooklyn Hospital Dispensary administered something over 2 000 treatments. In

1914 an effort was made to get the patients to continue treatment until discharged as cured. In 1915 the clinic administered about 6 000 treatments. During 1915 various improvements in follow-up method and education were made, and the patients were impressed with the necessity of keeping constantly under medical supervision until definitely told by the doctor that they were cured. This resulted in the administration of 15 500 treatments in 1916, and the automatic effect of constant effort was the remarkable record of 30 000 treatments in 1917, with no increase in facilities, personnel or equipment.

It is worthy of note that the increase in new patients does not account for the increase in the total amount of business. In other words, the treatment is actually curing some cases and closely approximating cure in a large number, instead of merely relieving the early and severe symptoms and letting the carrier continue his or her deadly work as is the all too common custom.

I believe that prior to entering the service we all had the idea pretty definitely fixed in our minds that the army spreads venereal disease. A good many people still hold that idea but contact with and study of the military procedure soon demonstrated to us that all civilian control methods were in force, and because of military procedure (which is another way of saying discipline) were and are more efficiently in force.

The method of attack upon the venereal problem in the military as in the civilian plan starts with education. By War Department regulation every man in the military must be instructed upon venereal disease. The education, therefore, is not only to be made available for the new army, but was in operation in the regular army. The recording of venereal disease is most complete in the army, so that it is possible to have statistics—in other words, the reporting of venereal disease is an actuality. Advice and diagnosis are available and treatment is compulsory, with penalties attached for failure to report.

Follow-up work is an actuality also, and the medical officer finding that his patient does not come back when ordered merely has to report the matter to the commanding officer in order to have the patient produced.

Quarantine is also enforced, for the orders state that "while in the infectious stages the men should be confined, strictly to the post" so that no man should be given leave of absence from the reservation until the medical officer can say that the case is no longer a menace to the civilian community. Naturally 100 per cent efficiency does not exist, and further, while developing morale and endeavoring to make over a large number of civilians into real soldiers, the efficiency rate is somewhat lower than it was in the regular army.

The point I particularly desire to make is that the army is not to blame for venereal disease and that we must all realize that the source of infection is within the civilian community, and the responsibility lies without the military reservation, not within. We are beginning to have some sort of an accurate index of the incidence of venereal disease in the community. The figures are now being reported in two groupings, all classified as new to the army, one group being contracted prior to enlistment and the other group contracted after enlistment. It will interest you to know that, during two recent weeks, of about 3800 cases of venereal disease that were new to the army, 675 were contracted after enlistment, and if we allow something for duplication we will discover that the civilian community presented the army in a period of two weeks with 3000 venereal problems.

When you realize the amount of work entailed in taking care of 3000 patients, and at the same time attempting to make them into soldiers, you will realize why we are making every effort to impress upon the civilian community the need for an active campaign against venereal disease and why we are expending so much time and energy upon control procedures within the army.

The programme of the Surgeon General for combating venereal disease is comprehensive and comprises (a) social measures to diminish temptation, (b) education of soldiers and civilians in regard to venereal diseases, (c) early treatment prophylactic measures against venereal diseases, and (d) medical care. Socially, we may diminish sexual temptations by the suppression of prostitution and the liquor traffic, and by the provision of proper social surroundings and recreation. When you remove the undesirable recreational facilities provided by the saloon and the prostitute, it is obviously necessary to substitute clean, healthful, red-blooded, man's size facilities for filling the natural desires for recreation. This work is carried on under the general supervision of the Commission on Training Camp Activities, with its various cooperating organizations. The educational programme for both soldiers and civilians covers lectures, pamphlets, exhibits, automatic lantern slide projection that will substitute for a lecturer, and the use of the motion picture. The army can and does provide this material and can and will make the audience attend. Bodies such as the New York State Medical Society and local county medical societies throughout the country should endeavor to reach the civilian with the same degree of thoroughness which we in the army are now using.

In illustration of the general scope of the work, the motion picture which I shall show will, I think, explain to you what we are doing and what can be done in the civilian community better than mere words of mine. The one thought

that I particularly wish to leave with you is that man power will win this war. In the experience which you have all had in the original draft you must realize the large incidence of venereal disease in the civilian population, the man power of which will become our army—realize further that we will need millions more men. It becomes the patriotic duty of the civilian communities, as well as to their own great advantage, to present to the army men free from venereal disease. To do this, therefore, all the known scientific procedures must be instituted, and I invite you to enlist in the warfare against venereal disease so that our country may be represented by an army fit to fight and industrial forces fit to work, an army that because of improved conditions, both civilian and military, may be continued as fit to fight.

### Discussion

DR. FREDERICK W. SEARS, Syracuse. I think the subject of this paper represents a great factor in our civilian work, as well as in the military camps in controlling these diseases.

A little more than a year ago, when the military camps located at Syracuse, we were confronted with this problem. The Y M C A of Syracuse were very much interested in the matter of protecting the public against the soldiers. It seemed to me at that time, that it was of great importance for us to protect the soldiers from infections, which might be carried to them by the civilian population.

A committee of eighteen was organized in Syracuse about fifteen years ago, which did remarkable work ridding our city of the segregated district. This committee brought out facts which proved to us, even at that early date, that the venereal problem was one of the greatest, if not the greatest problem in public health work, as it showed that there were approximately five thousand people in Syracuse, who were undoubtedly infected with these diseases.

At the present time our Syracuse Free Dispensary is doing some very remarkable constructive work, not only in the treating of these diseases, but in the following-up work, which is carried out through the assistance of the "Associated Charities and Churches" organization.

A card system is kept, which enables the follow-up worker to investigate every case which does not return for treatment on the date specified. The patient is first notified by letter, in a plain envelope, and should he ignore this letter, a personal visit is made to the patient, who is informed as to what may occur in case they fail to abide by the instructions given them.

Another feature which has increased the attendance to the Clinic, to a great extent, has been the placing of placards in the various saloons and public places of that kind calling attention to the free treatment at the dispensary.

This has done much toward eliminating the quack and drug-store treatment of these diseases.

I believe it important that all cities endeavor to establish a Dispensary of this kind.

DR WALTER A SCOTT, Niagara Falls. I would like to ask Dr SEARS. Do you ever use the Police Department in summoning these people to the clinics for treatment?

DR SEARS. No, the dispensary work has been so far very effectual, and it has not been necessary to call upon the police to enforce the observance of these regulations but we would not hesitate to call upon the police should the other means fail.

DR HALSEY J BALL, Glens Falls. I have found it difficult in the smaller cities in which I have tried to interest the people in the establishment of a venereal clinic to obtain the interest of the medical profession and management of the hospitals. There seems to be a feeling in rural communities that there is no necessity for this work. In order to obtain more information to bring before those communities, I would like to ask the reader of the paper if he has any knowledge of the proportion of venereal cases contracted in rural communities to those contracted in the larger cities.

LIEUT F J OSBORN. There is no such provision made as yet. There has been within the last ten days an authorization from the Surgeon General's office, asking for more detailed information as regards the number of cases, in fact information covering all of the venereal cases received since last September. That would be a very interesting point to bring out but we have not been able to get it as yet. Of course, it is available. It is a mere matter of taking the records and tabulating them. The drift boards have an opportunity to get a good bit of information, that is, those who are located in small villages and towns.

I was in conference with Major Townsend, who is in charge of the venereal disease service at the port of embarkation at Hoboken, the day before yesterday. This includes Camp Merritt, in connection with the port and also Camp Mills in Hempstead, Long Island. He now has some 1800 cases under his care in the vicinity and

claimed that at least 95 per cent of these cases were contracted prior to enlistment. That means that 95 per cent of the whole venereal problem is the civilian problem. This could perfectly well have been prevented had clinics been organized and treatment of patients been properly carried on.

Major Townsend was very strong on that point and claimed that as soon as a man is registered he should be considered as a man in service just as much as if he were in uniform. The period between the time of registration, which would be now, and the late summer and fall, when he is called to service, should be carefully guarded and intensive treatment should be given. On Hoffman's Island there are 800 cases in the hospital. It is a very serious problem and there is no question that the responsibility could and should be up to the civilian population.

There are very efficient laws in New York and New Jersey. In New York City in the last two weeks, I think, twenty-eight women have been examined in the night court under the law which compels "suspects" to submit to examination and if in a venereal condition to be put under treatment.

A small town in Jersey has recently begun to apply that law and twenty-five women have been examined in the last week. Twenty-one were positive Wassermann cases. These two laws, if definitely conscientiously and thoroughly applied, will go a long way toward cutting down the venereal menace in these two States. Many other States already have such laws—California, Massachusetts, Michigan and several of the Middle Western States are alive to the venereal problem and are doing all they possibly can to prevent the infection of the man in the service.

As to the question which was asked, those figures have not been tabulated.

DR WALTER A SCOTT, Niagara Falls. I suppose that every locality has its own problem in connection with this matter. I have not been in the general practice of medicine for some time but have always been interested in the control of the venereal situation. I was surprised to learn on taking the matter up with the medical profession of our city that about seventy-five per cent of the physicians of that city do not care to handle these cases on account of the financial end of it. I bring this point up because I believe that there is a thought that the establishment of venereal disease clinics may be more or less difficult because of the opposition of some physicians due to the financial loss which they might sustain as the result of the operation of such clinics. I think that this condition may be thought to pertain more or less in the smaller communities than in the larger cities but being a resident of one of the smaller

cities it seems to me that this condition is not one which need to be reckoned with if the feeling throughout such communities is the same as it is with our own. I think that the establishment of such clinics is one that the State Department could well take up through the various health officers and physicians of the State.

I thoroughly believe that the statement that the doctor made is true that it is a matter of protecting the soldier from the civilian rather than protecting the civilian from the soldier when it comes down to the question of venereal disease.

DR B R WAKEMAN, Hornell. In my experience in one of the draft boards up the State it seems to me that we have less venereal cases in the rural districts than in the city districts. In the first set of examinations, for instance, we found three cases of acute gonorrhea and three cases of syphilis. One of these cases which was recently brought in was found to be a 4 plus Wassermann. In the second set of examinations of 350 men we found one case of syphilis and one case of gonorrhea, making a total of four cases of gonorrhea and four cases of syphilis out of 650 men examined. Fully half of that number were married men. Now we will have mostly single men to be examined and we may find more venereal cases. It seems to me, however, that we have less of a venereal disease problem in rural districts than in the city.

DR WALTER A SCOTT, Niagara Falls. As I stated before I have not been in the active practice of medicine for four years but have been in a position where as a Health Officer of a city of about sixty thousand people I have come more or less in touch with the venereal disease situation, and it is my impression that we have much less of this disease in that city than we had ten or fifteen years ago. This impression is gathered from talks with local physicians and the fact that it is the general impression of the medical profession of our city.

DR CHARLES C DURYEA, Schenectady. Doctor Scott said that he thought it would be a good thing if the State Department of Health would take up the matter. In respect to the supposition that the physicians were not willing to co-operate in this work, the department has taken up the matter—and I might say in a great many instances the physicians representing the State Department of Health—investigated this and found in every instance a willingness to co-operate, on the part of the physicians of the community, with the move against venereal diseases. I have not found the opposition that the doctor speaks of. It may have been a local condition.

I think the reader of the paper has had some experience along that line and I think perhaps he may have some further information on the subject.

Now there is another thing in regard to the rural proposition. It has been my good fortune to study the venereal problem for the State Department among others and this has lead me to travel about the State not a little, and I have come to an opinion almost opposite to Doctor Wakeman. I believe that the venereal problem in the smaller communities is proportionately greater than in the city. I believe it is so because of the lack of facilities for efficient treatment. We all know that the treatment of venereal diseases in the smaller communities is looked upon with the same attitude that Doctor Scott has expressed and that view still obtains. When I was in practice, it was a matter of distaste. I felt a good deal as he did, and I think it holds true now.

I was very glad to hear Dr Wakeman speak of the results of examinations on the draft board and I have no doubt that the work was carefully done in that respect. Not very long ago I had the privilege of discussing this subject with a man who made most of the examinations on a draft board. He told me that there were few cases of venereal diseases discovered. He limited them to an extremely small amount. I had occasion, afterwards, to discuss the matter with a medical officer at the receiving camp and he said that they either had been careless in their examinations, or the cases were very recent infections. I am strongly of the opinion that the rural problem is the difficult part of the question. I believe it can be handled in the cities with clinics to a great extent, but it is not clear to me yet how to provide facilities for reaching the carriers that are spreading the disease in the smaller communities.

DR S W SAYER, Gouverneur. There is one question that I would like to ask the reader of the paper and that is how these diseases are discovered among the recruits as they come into the camp? I have read a great many figures showing a far greater proportion among the troops than has been discovered among the men examined. I would like to know whether or not more careful examination is made, and whether or not Wassermann and complement fixations are made as a routine procedure?

LIEUTENANT OSBORN. I have had no experience in the camps, but I think I can answer that question in a general way satisfactorily. There is no question but what the thorough examination in the camp is much more careful than the examination in the draft board rooms. Often, espe-

crally in a district which is heavily populated, you have a mass of men with a limited amount of time. Most of the draft boards, at least a good many of them, meet only in the evenings and have a limited number of hours to run their examinations through. No matter how thoroughly the examination is made, there are ways of getting around it and hiding the venereal condition. It is not uncommon to run into that in camp examinations.

In the camp the examinations are periodic. You have a new bunch perhaps twice a month, and sometimes oftener. Every time a man leaves camp and admits exposure to a venereal disease, he is given a prophylactic and given an opportunity to prevent infection. But, as a general rule, the examination in the camp is much more carefully done than in the draft board because there is no particular hurry in doing it. It is a matter of routine and if it is not completed to-day it is completed to-morrow, which is not absolutely true in the registration board rooms.

Routine Wassermann's are not applied. It is rather unfortunate. They should be done on every single man, but as a matter of fact they are not. Of course, the medical register does show if there is a history of the venereal disease, and if it does appear on the record that history is gone carefully into.

I don't know whether all the camps run as high as this or not, but the medical officer in charge of Camp Dix informed me that in that camp it ran as high as 20 per cent that is 20 per cent of the new draft. More recently, I have had information from a similar camp which has been limited definitely to the unmarried men and it ran as high as 27 per cent. The principle problem is the unmarried men in the prime of life—from twenty one to thirty-one.

DR BILL: Does that 27 per cent represent acute conditions?

LIEUTENANT OSBORN: That represents all conditions—syphilis and chronic gonorrhea. A large percentage of the men were gonorrheic patients who had been mishandled by quacks and drug clerks who had not thoroughly treated the case and under the stress and strain of camp life they became recurring cases.

DR B. R. WAKEMAN: When we call a drafted man for physical examination, he first makes a statement as to his physical condition. As a rule he is not at all anxious to go to war. If he has any slight defect no matter what it is, you may rest assured he is going to speak of it. If he has any venereal disease he is sure to mention it, because he thinks it will postpone his trip to camp. My impression is that these men will not try to cover anything up.

## RECENT FACTORS IN THE CONTROL OF VENEREAL DISEASES IN THE STATE OF NEW YORK \*

By MATTHIAS NICOLL, JR. M.D.

Deputy Commissioner, State Department of Health, New York

**M**OST physicians, and all public health officials, have agreed that progress in the control of venereal disease is very largely dependent on disassociation of these diseases from the sphere of personal morality and recognition of the problem as essentially the same as that involved in the control of infectious diseases in general. I do not mean by this statement to belittle the value of moral influence or the teaching of sexual continence, but these alone can make but little headway against the results of indulgence in promiscuous sexual relations, unless they be fortified by a campaign of public health education as to the nature and results of venereal disease infection, together with the exercise of official sanitary restraint of those who are infected.

Yet notwithstanding the desirability of regarding the venereal disease problem as essentially one of epidemiology there are two characteristics of venereal disease not met with in other infections. The first is due to the fact that the contraction of a venereal disease is usually the result of a voluntary act, thus placing the responsibility directly upon the person infected, and not, as in the case of other infections, with the sanitary authorities, and the second to the fact that such a voluntary act, except in the case of man and wife, involves the factor of moral turpitude, which leads to secrecy and neglect to seek advice regarding treatment and methods of preventing infection of others. These two characteristics will in all probability always have to be reckoned with to a greater or less extent, and while rendering the problem difficult of solution should not cause us to throw up our hands in despair. No thoughtful man expects to eradicate venereal diseases from the State or nation or world at large but the public health official who doubts that they can be greatly diminished is not worthy to hold office.

The prevalence of venereal diseases has been perfectly well known to the medical profession, but it cannot be said that the profession as a whole has taken any definite steps to inform the public of the true facts. Here and there a few medical men have been brave enough to overstep the limiting bonds of professional conservatism. A few social organizations and one or two States and city departments of health have made more or less well directed efforts to educate the public, but it has taken a world war to open the eyes of the people as a whole to what

\*Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 23 1918.

is rightly regarded as the greatest menace to the physical welfare and happiness of this generation and those that are to follow

The New York State Department of Health since its reorganization in 1914 under the present Commissioner has been confronted with so many problems requiring more or less immediate solution that it has not been in a position until fairly recently, with the staff and funds at its disposal, to undertake in any large way a campaign against venereal disease. The beginning of the campaign which the department is now in a position to wage in earnest was coincident with the passage by the Legislature of 1917 of the amendment to the marriage law requiring that both parties applying for a marriage license in the State of New York shall swear to the following statement

"I have not to my knowledge been infected with any venereal disease, or if I have been so infected within five years I have had a laboratory test within that period, which shows that I am now free from infection from any such disease"

Placards were later sent to all marriage clerks to be posted conspicuously in their offices, calling the attention of the candidates for a marriage license to this amendment. In addition to this, arrangements were made with certain moving picture houses calling attention to men and women, by a notice on the screen, to the amendment to the marriage relations law

Criticism of this legislation has been due to a misunderstanding of its purpose. It was contended that many applicants would commit perjury in order to get a license. Even if this were generally true, and it may be assumed that this frequently will be the case the amendment, if widely known and fully understood, must have the greatest value as a factor in public health education. Members of the administrative and field staff have taken every occasion, in making public addresses throughout the State to call attention to it, and it is believed that the women especially can be counted upon to use their influence to make this law a real factor in bringing about clean marriages, especially if the public are educated as to the results which will inevitably follow the marriage of persons one or both of whom are infected with syphilis, gonorrhea or both.

It was with some misgiving that the department in May, 1917, published its first venereal disease number of *Health News*, which contained articles and illustrations stating very plainly the facts. This number has received a good deal of attention and practically no criticism from any source worthy of consideration. In the latter part of 1917 the department issued a series of six boiler plate articles, which were sent to some 250 newspapers throughout the State, on the subject of "Social Hygiene and the Public." The first article called attention to the marriage re-

lation law, the second explained why the law was passed, the third contained advice to the men about to marry, the fourth to the women about to marry, the fifth to parents, and the sixth to each of us. As an evidence of the changed attitude of the public toward discussion of this formerly tabooed subject, it was extremely gratifying to have some 200 newspapers accept and publish these articles. It is safe to say that five years ago not a newspaper in the State would have done so. The articles have been favorably commented upon, and requests have come from a number of additional papers, apparently influenced by friendly public criticism, to be allowed to publish them.

By an amendment to the Sanitary Code adopted in March, 1917, chancroid, gonorrhea and syphilis were declared to be infectious and communicable diseases highly dangerous to the public health, and it was made incumbent upon every physician when first attending a person affected with chancroid, gonorrhea or syphilis to furnish said person with a circular of information issued or approved by the State Commissioner of Health, and to instruct such persons as to the precautions to be taken in order to prevent the communication of the diseases to others. The interpretation of this regulation has led to some confusion, a number of health officers and practising physicians believing that it meant that these diseases should be reported. This is not the case at present, although it is highly probable that before long some method of reporting—possibly that known as the West Australian System and now adopted in Massachusetts and other States—will be also adopted in the State of New York. The fact that the State does not require the reporting of these diseases does not mean that cities cannot require it. Reporting is already required in a number of cities throughout the State.

By an act of the last Legislature the State Department of Health was, for the first time, placed in a position to wage an active campaign against venereal disease by the appropriation of funds for an adequate administrative staff, together with traveling expenses, and provision for the manufacture and distribution of salvarsan or a substitute. These funds, amounting to \$30,000, become available on July 1. In addition the Legislature amended the public health law and provided as follows. I think it would be well for me to read this legislation in full, as its provisions are not generally known.

#### ARTICLE 17-B

##### REGULATION OF CERTAIN CONTAGIOUS DISEASES

##### Section 343-m Suspected persons

Sec 343-m Suspected persons Whenever the board of health or health officer of a health district shall have reasonable ground to believe that any person within the jurisdiction of such

board of health officer is suffering from, or infected with, any infectious venereal disease and is likely to infect or to be the source of infection of any other person, such board of health or health officer shall cause a medical examination to be made of such person, for the purpose of ascertaining whether or not such person is in fact suffering from, or infected with, such disease, and every such person shall submit to such examination and permit such specimens of blood or bodily discharges to be taken for laboratory examinations as may be necessary to establish the presence or absence of such disease or infection, provided that the required examination shall be made by the health officer or, at the option of the person to be examined by a licensed physician who in the opinion of the health officer is qualified for this work and is approved by him and such licensed physician making such examination shall report thereon to the board of health, health department or health officer but shall not issue a certificate of freedom from venereal disease to or for the person examined. Such suspected person may apply to a magistrate for an order restraining such examination and no examination shall then be made except upon order of such magistrate. Before such examination each suspected person shall be informed of this right and be given an opportunity to avail himself or herself thereof.

**Sec 343 n Convicted persons.** Every person convicted of vagrancy under subdivision three or four of section 887 of the code of criminal procedure or under section 150 of the tenement house law or under any statute or ordinance for any offense of the nature specified in subdivision four of section 887 of the code of criminal procedure or any person convicted of frequenting disorderly houses or houses of prostitution, shall be reported by the court or magistrate before whom such conviction is had to the board of health or health officer of the health district in which the offense occurred, and shall not be released from the jurisdiction of such court or magistrate until the person so convicted has been examined as provided for in the preceding section.

**Sec 343-o Treatment required.** Every person who by the examination is provided for in section 343 m is found to be suffering from or infected with any infectious venereal disease shall be required by the board of health, or the health officer of the district in which such person resides, to conform to all the rules and regulations made and approved by such board of health or health officer for persons so diseased, such rules and regulations, except as to the city of New York, to be first approved by the State Department of Health. Such rules and regulations shall provide that such person shall submit to a prescribed course of treatment by a duly

licensed physician, engaged by the infected person, who has been approved by such board of health, health officer or the State Department of Health. Such rules and regulations may provide for the isolation and treatment of persons so infected and the local board or health officer shall in that case define the place and limits of the area within which such person shall be isolated, and the conditions under which such isolation and treatment shall be terminated. Any of such rules and regulations may be reviewed in the courts and tested as to reasonableness in a proceeding instituted by any person directed to conform therewith pursuant to this article.

**Sec 343-p Free treatment for indigent persons.** Any person who is suffering from a venereal disease in an infectious stage and who is unable to pay for treatment may make application for care and treatment to the board of health of the health district in which such person resides and such board shall promptly institute treatment. If such board or health officer after investigation finds that such person is in fact unable to pay for such treatment, such treatment shall be continued for such person without cost at the expense of the said district.

**Sec 343 q Treatment only by physicians or on their prescriptions.** No person other than a licensed physician shall treat or prescribe for a case of venereal disease, or dispense a drug, medicine or remedy for the treatment of such a disease except on prescription of a duly licensed physician. Such prescription shall be retained by the person dispensing such drug, medicine or remedy, and no copy of such prescription shall be made by or delivered to any person, and such prescription shall be filled but once.

**Sec 343 r Reports and information confidential.** All reports or information secured by a board of health or health officer under the provisions of this article shall be absolutely confidential except in so far as is necessary to carry out the purposes of the article.

**Sec 343 s Penalties.** Any person who shall violate any of the provisions of this article or any rule or regulation made and approved under the provisions of section 343-o shall be guilty of a misdemeanor. Any person who, knowing himself or herself to be infected with venereal disease, such as chancre, gonorrhea or syphilis, in any of the variations or stages of such diseases, has sexual intercourse with a person in the military or naval service of the State or of the United States shall be guilty of a felony.

**Sec 343 t Definitions.** The term "health district" as used in this article shall mean a city, town, village or consolidated health district having a separate board of health.

Sec 2 This act shall take effect immediately

While the plan of campaign has not been fully developed, it will include the establishment of clinics in some twenty cities of the State for the care and treatment of venereal diseases. A systematic course of lectures to the public on the nature of these diseases and the consequences which follow infection with them, and provisions for the manufacture by the laboratory and free distribution of salvarsan throughout the State to those who cannot pay. In cities like Buffalo, Rochester and Syracuse, which have for some time carried on good work along this line, it will be only necessary by cooperation to increase and make the work more effective. Judging by observations which I have personally made in the city of New York in the Second District Court, known as the "night court," and from conferences that I have had with members of the New York City Department of Health and members of the Buffalo Department of Health and division hospitals and dispensaries, I have little doubt that in the large cities, at any rate, there will be no difficulty in carrying out the provisions of the new law. In the country districts, of course, many problems will have to be met, especially in the matter of the care and detention of infected individuals, but there can be no doubt that with the power which this legislation places in the hands of the State and local authorities good results will accrue in the diminution of the spread of these diseases.

Before closing I should mention another factor in controlling venereal diseases, namely, the State police. Major Chandler has offered his troopers to assist in every possible way in this work and has already been of service in controlling prostitution. Those of you who know how difficult it is to put into action the machinery for closing houses of prostitution in rural districts will be glad to know that the State police can be absolutely relied upon to perform this service, and when requested will place a trooper in front of every suspected house, which will inevitably result in their closing and driving the inmates from town.

I have thus briefly outlined what has been done in this State and what is hoped for the future. I feel certain that the medical profession can be counted upon to lend their utmost cooperation with State and local authorities in helping to solve this most important problem. That this cooperation will lead to the greatest service to the people at large cannot be doubted, and that it is a direct and very important patriotic duty is proven by the fact that during the past year the State Department of Health has had frequent and most urgent appeals from the Federal health authorities to use its utmost efforts in protecting the health of the soldiers of the United States.

## STEPHEN SMITH

An article by Dr. Stephen Smith upon War Surgery appears in the present JOURNAL. It is notable not alone from the standpoint of modern surgery, but from the fact that over fifty years ago he published a book which became widely known, entitled "Handbook of Surgical Operations in the Civil War." Dr. Smith is in his ninety-sixth year, and his experience dates back long before the days of our Civil War.

The remarks of Dr. John L. Heffron at the time this address was delivered may be in part reproduced, as a just tribute to a man, who for sixty-seven years has brought honor to the medical profession. They are as follows:

"Dr. Stephen Smith has accomplished more for the advancement of sociological medicine than any other physician whose name adorns the pages of the medical history of our state.

A review of his career is a record of achievement so unusual in extent, so varied in fields of activity and of such permanent value to the commonwealth as to make his name remembered throughout time. No one can read it without wondering how a man actively engaged in an exacting profession could have accomplished so much.

How did Dr. Smith do it? Well, if I were to attempt an analysis for the benefit of students I should say, first, that the impulse to work and to serve others was born in him and dwelt with him. That he must have learned to see things with perfect accuracy and in their right relations on the hills of Onondaga.

Impulse to service for others, and the clear judgment of the relative importance of the needs of the people with whom he lived, served him throughout his long career as the leader in social reforms. First the health problems of his own city, then of the state, then of the nation, and finally the international importance of improved health conditions engaged his attention, and in the reforming of health measures he was not only the leader, but was the one man competent to carry them through to completion. It was the same story when he devoted himself to the study of the problem of the relation of society to feeble-mindedness, to insanity, and to crime.

But this success in persuading others of the reasonableness and of the necessity of solving problems worked old and long neglected needed other qualities. A man by nature devoted to the welfare of others must have love in his heart and a sense of personal responsibility that of necessity make him tender and lovable.

These same qualities are the very foundation for the development of charm of manner which has always characterized Dr. Smith. He has been so true, so sure, so sweetly reasonable, so persuasive that even legislatures could not resist him. And he has too the saving grace of humor. Add all these together and find them well balanced in a man who has inherited an iron constitution, and there is no limit to his possibilities. Now at ninety-five, he is still working, is still planning, is still the first man consulted in any great sociological movement, is just as tender and lovable and as full of humor as an egg is of meat.

Personally, Dr. Smith is a valiant, upstanding character, straight, erect, and self-disciplined as an army officer, keen and quick of perception, yet with the genial humorous "twinkle." No one could clasp his hand and look into his face without feeling impressed with his astonishing vitality and virility.

# Medical Society of State of New York

## NOTES BY THE SECRETARY

### A MESSAGE TO THE MEMBERS AND COUNTY SOCIETY OFFICERS

The issue of the Directory this year has been slightly delayed because of prolonged strikes in the printing business. It will soon however, be in the hands of the members.

Two difficult questions have arisen in the make up of the Directory this year. The first pertains to the addresses of members in service. After considerable deliberation it was thought best to print the address of such members as it last appeared unless a more definite address could be obtained. Letters sent to the last address of a member in service are more likely to reach him than by any other means unless special information is available to the writer.

The second point arose in reference to giving, sonic distinguishing mark by a star or other symbol to those members who are in service. At first thought his would seem desirable and proper. A brief consideration, however, will show that it might work grave injustice. Surgeons are all the time returning and taking up their private practice. Even should the year continue scores will have returned within the next year. Should it cease several hundred at least will be back in the State.

The Directory is not a temporary record but is permanent for a year from the date of its publication. It would be unjust to mark a man as away from his home and in service in France or any other place who is in fact at home endeavoring to make a livelihood in private practice. For that reason no distinguishing mark has been given to men in service.

### DELEGATES

In September I wrote at considerable length upon the subject of delegates and the importance of electing them to that office who are reasonably certain to perform their duties. I would again call attention to the fact that no person not in good standing in his county society can sit in the House of Delegates. Every year physicians present credentials who have not paid their dues and assessments. They cannot be seated. It is almost an annual occurrence that physicians are elected delegates who are not members of the society. Such action deprives the county society of representation and places the physician in a most disagreeable position. Neither the Secretary nor the House of Delegates itself can override the by laws.

F M C

### SECTION ON EYE, EAR NOSE AND THROAT

The annual meeting of the Medical Society of the State of New York will be held in Syracuse May 6 1919.

Because of the number of our members in the Army and Navy and in the Selective Service the time devoted to clinical and research problems is limited. To make our next session of sufficient value to those who can attend it is essential that our program be of more than ordinary interest.

The attention of every member of the Eye Ear Nose and Throat Section is hereby called to this official invitation so that prospective writers of papers or those who wish to present cases or specimens write immediately to either the Chairman or Secretary giving the title of their communication.

Our program is nearly completed.

JAMES F. McCaw M.D. Chairman  
Bank & Loan Bldg. Watertown

ARTHUR J. BEDELL, M.D. Secretary  
344 State Street Albany

## District Branch Meetings

### FIRST DISTRICT BRANCH

#### ANNUAL MEETING TUXEDO

Thursday October 17, 1918

The meeting was called to order by the President, Dr. Joseph B. Hulett at twelve o'clock in the Tuxedo Club. There were fifteen members present.

The following officers were elected for the ensuing two years: President Joseph B. Hulett M.D. of Middletown; First Vice-President, George A. Leitner M.D. of Piermont; Second Vice-President Edward C. Rushmore, M.D. of Tuxedo Park; Secretary, Charles E. Denison M.D. of New York; Treasurer, John A. Card M.D. of Poughkeepsie.

#### SCIENTIFIC SESSION

'Etiology of Pneumonia and the Present Influenza' by Rufus I. Cole M.D. of the Rockefeller Institute New York.

Address Floyd M. Crandall, M.D. Secretary of the Medical Society of the State of New York New York.

'The Importance of the Adoption of Electrocardiography and Orthodiagraphy as Routine Measures in the Management of Disorders of the Heart' by Louis F. Bishop M.D. New York.

'Radum Versus Surgery in the Treatment of Carcinoma of the Bladder and Prostate' by Benjamin S. Barringer M.D. New York.

### THIRD DISTRICT BRANCH

#### ANNUAL MEETING KINGSTON

October 3 1918

The meeting was called to order by the President Dr. Luther Emerick.

A fitting inspiring and patriotic address of welcome was given by the Acting Mayor Mr. Watts.

Address by James R. Nelson, M.D. President of the Medical Society of the County of Ulster.

The minutes of the last meeting were read and approved.

The following officers were elected for the ensuing two years: President Luther Emerick of Saugerties; First Vice-President James H. Mitchell of Cohoes; Second Vice-President Charles P. McCabe, of Greenville; Secretary Herbert L. Odell of Sharon Springs; Treasurer Clark G. Rossmann of Hudson.

It was moved by Dr. Stern and duly seconded and carried that the program of this meeting together with one of the souvenirs be sent to each member serving with the colors.

An informal talk on Skin Diseases was given by L. Duncan Bulkley M.D. New York City.

A delightful automobile trip to the Ashokan Reservoir and an excellent dinner at Watson Hollow Inn was followed by the following interesting scientific session.

Address 'Some of the Patriotic Duties of the Doctors Who Stay at Home' Luther Emerick M.D., President Third District Branch Saugerties.

Address Floyd M. Crandall M.D. Secretary Medical Society of the State of New York New York City.

'The Medical Treatment of Cancer,' L. Duncan Bulkley M.D. New York City.

'Unusual Cases of Ectopic Pregnancy,' Alvah H. Traver M.D. Albany.

The able discussion of the last two papers which followed was led by Edgar A. Vander Veer M.D. Albany.

It was moved seconded and carried that President Emerick's address be published in the JOURNAL of the State Society.

## FIFTH DISTRICT BRANCH

ANNUAL MEETING, UTICA

October 2, 1918

On account of the great prevalence of the influenza epidemic, no morning session was held

The President, Dr G Massillon Lewis, called the meeting to order at 2 30 P M. About seventy-five members were in attendance

"Some Cardiac Arrhythmias and Their Treatment," John L Heffron, M D, Syracuse

A moving picture "Keeping Fit" was exhibited by the State Department of Health

"Americans and the War," Hon Frederick Davenport, Clinton

"Prostitution in Relation to Venereal Diseases and Present Measures for Control," Joseph E Clark, M D, Utica Discussion by J E Lawrence, M D, Chief Bureau of Venereal Disease, State Department of Health, Albany

"The Rationale of Neurasthenia and of Disturbances of Arterial Tension and Heart Beat," George E Barnes, M D, Herkimer

Address, Floyd M Crandall, M D, Secretary Medical Society State of New York

## SEVENTH DISTRICT BRANCH

ANNUAL MEETING, AUBURN

Tuesday, October 8, 1918

The meeting of the Seventh District Branch was called to order by the President, Dr John Pratt, after a fine luncheon which was served by the ladies

In spite of the epidemic of influenza in Auburn, which greatly reduced the number in attendance, a very interesting program was presented

Dr Robert T Morris, of New York City, gave a talk on "Surgery and Mental Derangements," which was much appreciated, a discussion followed by Dr John R Williams and Dr Joseph Roby, of Rochester

Dr Arthur H Payne, of Rochester, read a paper on "The Status of Modern Prostatic Surgery," which was up-to-date, conservative and instructive

Dr Joseph Roby, of Rochester, read a paper on "A Simple Method of Feeding Infants," in which much interest was shown in its discussion by several physicians present

Owing to illness due to influenza and pneumonia, Drs Louis F O'Neill and George C Sincerbeaux, of Auburn, and Dr Donald Guthrie, of Sayre, Pa, were unable to be present and their papers were read by title The paper of Dr Mortimer Brown, of Rochester, was also read by title, he being absent on account of important business

It was moved, seconded and carried that the next meeting be held in Rochester

## County Societies

## MEDICAL SOCIETY OF THE COUNTY OF ESSEX

ANNUAL MEETING, PORT HENRY

Wednesday, October 3, 1918

The meeting was called to order at 3 P M in the Lee House by the President, Dr J P J Cummins Roll call showed the following members present Drs Canning, J P J Cummins, T J Cummins, Houghton, McCasland, Saville, Sherman and Payne

Minutes of the previous meeting were read and approved The President appointed the following nominating committee for officers for 1919, Drs McCasland, Saville and Houghton, who reported the following nominations For President, Dr T J Cummins, of Mineville, for Vice-President, Dr J H

Evans, of Elizabethtown, for Secretary, Dr C R Payne, of Wadhams, for Treasurer, Dr W T Sherman, of Crown Point, for Censors, Drs J P J Cummins, R T Saville and G S Houghton, for Delegate to State Society, Dr G S Houghton, of Westport, for Alternate to State Society, Dr C R Payne, of Wadhams

Motion made and seconded that the Secretary be instructed to cast one ballot electing these men officers for 1919 Carried

The Treasurer read his report showing about \$50.00 in the Treasury Report accepted

## SCIENTIFIC SESSION

Dr McCasland gave an interesting review of his experiences at the State Society Meeting

General discussion of the subject of Eclampsia Description of the work of the Neuro-Psychiatric Hospital of the War Department at Plattsburg by Dr C R Payne, Contract Surgeon at the hospital

## MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON

ANNUAL MEETING, HUDSON FALLS

Tuesday, October 1, 1918

Owing to lack of quorum no morning session was held

Meeting of Comitia Minora held 1 P M

Treasurer's bill for \$3.00 Audited and paid

Secretary's bill for \$3.81 Audited and paid

Regular meeting called at 1 30 P M

Members present Drs Orton, Park, Paris, Madison, Blackfan, Leonard, Heath, Pashley, Lee, Ketchum and Banker

Visitors Dr George E Beilby, of Albany, and Dr Halsey J Ball, of Glens Falls, Sanitary Supervisor for this district

The Minutes were read and approved

Secretary's report received Treasurer reported \$88.18 on hand It was moved and carried that the Treasurer buy a \$50 Liberty Bond

The President appointed Drs Paris, Lee and Banker, Nominating Committee and the following were nominated and elected President, L S Budlong, of Fort Edward, Vice-President, Harley Heath, of Comstock, Secretary, S J Banker, of Fort Edward, Treasurer, R C Paris, of Hudson Falls, Censors, W C Cuthbert, W A Leonard and C W Sumner

Dr Z V D Orton was elected delegate to the State Society in place of Dr Munson

The President appointed the following Committee on Legislation W B Melick, R C Davies and R H Lee

The following resolutions were presented and adopted

WHEREAS, Since the last meeting of the Medical Society of the County of Washington, Dr Franklin T Beattie, one of our most active and useful members, has been called to his last reward, and

WHEREAS, By his conscientious work as a physician he has contributed to the relief of suffering in his community, and will be greatly missed in the vicinity in which he resided, therefore be it

Resolved, In recording his death we express our appreciation of his excellent qualities as a physician, and our deep regret that death has ended a career so useful, be it further

Resolved, That a copy of these resolutions be spread on the minutes of this Society, and a copy sent to the bereaved family of our deceased member

(Signed) W A LEONARD

H S BLACKFAN

Z V D ORTON

Committee

# SCIENTIFIC PROGRAM

The President's address was on the Mary McClellan Hospital. The only hospital in Washington County. A thoroughly equipped hospital with X ray outfit cold storage sterilizing outfit, a department for contagious and infectious cases, a nurses home etc.

Dr Beilby gave a very interesting and instructive paper on the diagnosis and treatment of Thyroid Lesions giving rise to symptoms of Hyper Thyroidism. The doctor stated that diagnosis of the border line cases can be made by a differential leucocyte count and that sometimes slight enlargement produced severe symptoms. In the surgical treatment he advocated the removal of a small portion of the gland at first and a second operation later. A ringing vote of thanks was given to Dr Beilby.

Dr Lee then presented an unusual case of appendicitis in a man sixty eight years old in which the symptoms did not indicate the serious condition found at operation.

Dr Brill spoke on the importance of early diagnosis in tubercular cases and the good work done at the Ry Brook Sanatorium. He also spoke on an epidemic of enterocolitis in Clinton County and the influenza epidemic now occurring in Schuylerville.

## Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made in review as dictated by their merits or in the interest of our readers.

THE DOCTORS PART WHAT HAPPENS TO THE WOUNDED IN WAR BY JAMES ROBB CHURCH A. M. M. D. Col Medical Corps U. S. A. with foreword by Major General WILLIAM C. GORGAS Surgeon General U. S. A. Illustrated by D. Appleton & Co. New York and London 1918. Price \$1.50 net.

ANALYSIS OF PLEURO-PULMONARY AFFECTIONS BY F. BARJON Translated by J. A. HONEY M. D. Assistant Professor of Medicine in charge of Radiography, Yale Medical School. Published by New Haven Yale University Press 1918. Price \$2.50.

SCIENCE OF THE EYE BY WILLIAM CAMPBELL POSEY A. B. M. D. Ophthalmic Surgeon Wills and Howard Hospitals. Professor Diseases of the Eye. Philadelphia Polytechnic, Ophthalmologist Department of Physical Education University Pennsylvania 120 Illustrations. Published by J. B. Lippincott, Philadelphia and London 1918. Price \$4.00 net.

DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS. SAM L. ROGERS Director. Mortality Statistics 1916. Seventh Annual Report. Published by Washington Government Printing Office 1918.

HOSPITALS THEIR MANAGEMENT AND DEVELOPMENT A book for Administrators Public Health Workers and all interested in Better Medical Service for the People. By MICHAEL M. DAVIS JR. Ph.D. Director Boston Dispensary, and ANDREW R. WARNER M.D. Superintendent Lakeside Hospital Cleveland Illustrated. Published by the Macmillan Company New York 1918. Price \$2.25.

PHOTOGRAPHS ON EXPERIMENTAL BIOLOGY FORCED MOVEMENTS TROPISMS AND ANIMAL CONDUCT BY JACQUES LOFF M. D. Ph.D. Sc.D. Member of the Rockefeller Institute for Medical Research. Published by J. B. Lippincott Company, Philadelphia and London 1918. Price \$2.50 net.

## Book Reviews

THE SURGICAL CLINICS OF CHICAGO Volume 2, Number 2 April 1918. Octavo of 208 pages 50 illustrations Philadelphia and London W. B. Saunders Company 1918. Published Bi Monthly. Price per year Paper \$10.00, Cloth \$14.00.

The Surgical Clinics of Chicago for April 1918 present many cases out of the ordinary. The method of dealing with the cases is equivalent of a presentation before a local organization being conversational in type as well as didactic. The range of subjects presented while all surgical are of an intense interest even to the general Practitioner and much can be learned from a diagnostic standpoint. Dr Roy L. Moodie presents a very interesting article on Pathologic Lesions Among Extinct Animals. The article covers the Pathology of over millions of years in the past and teaches us that our present diseased states are not original with our advanced civilization. The Surgical World is to be complimented in having a Journal of this type coming at regular intervals with its practical teaching. E. W. S.

COLLECTED PAPERS OF THE MAYO CLINIC, Rochester, Minnesota Volume 9 1917. Octavo of 866 pages 331 illustrations Philadelphia and London W. B. Saunders Company, 1918. Cloth, \$6.50 net.

The 9th Volume of the Mayo Clinics comes to hand with its assembling of original observations and advance technique. It is almost impossible to select articles of special value as each one is a distinct contribution in itself. The arrangement of the papers is according to the various anatomical systems and in this way each specialist can find those topics discussed which appeal to him as an individual. The illustrations are of material help in the description of the various steps in the operative technique and physiologic observations and simplifies what might seem complicated. The section on blood work dealing with the presence of Urobilin and Urobilinogen in the Duodenal Contents and also the Influence of Bile and its Derivatives in Bloor's Cholesterol Determination are of much value. As stated to appreciate the worth of the book it must be perused slowly and carefully making a very valuable work to pick up for short reading at odd moments. E. W. S.

THE MEDICAL CLINICS OF NORTH AFRICA Volume 1, No. 6 (The Southern Number May 1918). Octavo of 224 pages illustrated. Philadelphia and London W. B. Saunders Company 1918. Published bi monthly. Price per year Paper \$10.00, cloth \$14.00.

This is the southern number and contains thirteen articles by clinicians in that section of the country.

The most important subjects discussed are Nephritis by Dr J. B. McElroy of Memphis Artificial Pneumothorax by Dr Charles L. Minor of Asheville N. C. Malaria by C. C. Bass of New Orleans and Treatment of Malaria by Dr W. H. Deaderick of Hot Springs Arkansas. There is also a concise and well written article on The Care of the Premature Infant by Dr Lawrence T. Royster of Norfolk, Virginia. There are also clinics by Dr George S. Bel of New Orleans Dr Bryce W. Fontaine of Memphis Dr J. Heyward Gibbs of Columbia S. C. Dr Robert Wilson Jr. of Charleston S. C. Dr James F. Paulin of Atlanta and Dr John P. Munroe of Charlotte N. C.

While probably the scope of this volume is not quite as wide as that of the preceding ones and the papers are not on such interesting subjects nevertheless there is much that is well worth reading in it and the writers are men of such standing as to command the consideration of their views with respect.

W. H. DONNELLY

A MANUAL OF OTOTOLOGY By GORHAM BACON, A B, M D, F A C S Assisted by TRUMAN LAURANCE SAUNDERS, A B, M D Seventh Edition, revised and enlarged 583 pp With 204 illustrations and 2 plates. 12mo Lea & Febiger, New York and Philadelphia, 1918 \$3.00

Dr Bacon's work on the ear has been so long before the medical public that each succeeding edition is closely examined by the men who specialize in this department to determine whether it truly rises to the exacting level required of a standard medical text-book. It can truly be said that both author and publisher instead of resting on their laurels have in this case come to the fore with a book entirely competent to stand the test, and that its author has succeeded in his aim of producing a work comprising all the essentials of the art and practice of the treatment of diseases of the ear.

The chapter on chronic middle-ear discharge is one that we would that every practitioner, with a case of "running ear" in his charge, might read. Dr Saunders, in assuming responsibility for the representation of the interpretations and significance of nystagmus in connection with disorders of the membranous labyrinth and for the comparatively recently developed tests for the normal and diseased labyrinth, has inserted new matter supplementing the former editions. In the choice of what he has included as well as in what has been omitted the reviewer believes he has shown excellent judgment. In the few pages which he has devoted to suppurative inflammation of the labyrinth he gives a brief history of the development of operations of the labyrinth, the anatomy and physiology of the static labyrinth, the significance of nystagmus, vertigo, nausea and vomiting and staggering in connection with diseases of the labyrinth, the methods of examination of the labyrinth with the turning and caloric tests, operation on the labyrinth and the relations of the labyrinth to intracranial disturbances. The remarks following, devoted to disturbances of the labyrinth which are not due to suppurative inflammations of the labyrinth, might, we believe, well be extended. Still, as conservatism in operation upon the labyrinth is elsewhere in the book instilled into the reader, it is perhaps not necessary to state here that even in undoubted cases of labyrinthine suppuration, the best time for operation is, if possible, *after* the subsistence of the acute attack, when the labyrinth has had time to wall off the diseased area from the meninges by granulation tissue deposits. W C B

A TEXT-BOOK OF ELEMENTARY MILITARY HYGIENE AND SANITATION By FRANK R KEEFER, A M, M D Second Edition, reset 340 pp Illustrated 12mo Philadelphia and London W B Saunders Company, 1918 Cloth, \$1.75, net

Colonel Keefer's second edition of his well known Text-Book on Military Hygiene and Sanitation is timely and useful. The book has been practically rewritten and embraces all the latest changes and additions in the field of military hygiene.

The chapters on Physical Training, Equipment, Sanitation of Posts, Barracks and Transports, Camp Sanitation and Trench Warfare are especially lucid and complete.

It is to be regretted that the chapters on Recruits and Recruiting do not contain the latest rules of the Surgeon General on the subject.

In the chapter on Preventable Diseases, the subjects of trench-fever, prevention of gassing, typhoid and para-typhoid inoculations, are not as well covered as these subjects deserve.

The chapter on Food is not complete and does not give the rations and caloric values of foods, as given in the army.

On the whole the book is very practical and useful and will be largely used in military and medical training. G M P

THE SERIOUSNESS OF VENEREAL DISEASE By SPRAGUE CARLETON, M D, F A C S Paul B Hoeber, New York 1918 Price, \$50

This little book was prepared for Base Hospital No. 48, and consists of twenty-six illustrations showing the ravages of venereal diseases, each illustration is accompanied with a short explanatory history. The book ends with a copy of the instructive leaflet on gonorrhea and syphilis used in the Genito-Urinary clinics of New York City.

The book may have served a useful purpose for what it was originally intended, but it is a question if it will be of much use to either the profession or the laity. W.

## Deaths

- ERNEST WILLIAM AUZAL, M D, New York City, died October 13, 1918  
MICHAEL F BLACK, M D, New York City, died October, 1918  
FREDERICK LOVELL BOGUE, M D, New York City, died October 26, 1918  
FRANK E L BRECHT, M D, Buffalo, died October 29, 1918  
HERBERT M BURRITT, M D, Hilton, died October 11, 1918  
LORENZO BURROWS, JR, M D, Buffalo, died September 17, 1918  
WALTER FRANKLIN CHAPPELL, M D, New York City, died October 19, 1918  
EDWIN BRADFORD CRAGIN, M D, New York City, died October 21, 1918  
HAROLD M FRENCH, M D, Freeport, died October 18, 1918  
GEORGE W GORRILL, M D, Buffalo, died October 27, 1918  
JOHN P HEYEN, M D, Northport, died October 30, 1918  
AUSTIN L HOBBS, M D, New York City, died September 26, 1918  
BERNARD WILLIAM JUNG, M D, New York City, died October 12, 1918  
JOSEPH KAUFMAN, M D, New York City, died October 28, 1918  
ROBERT COLEMAN KEMP, M D, New York City, died October 23, 1918  
ABRAHAM KORN, M D, New York City, died October 12, 1918  
EMANUEL J LFAVITT, M D, Brooklyn, died October 24, 1918  
WALTER W LOWELL, M D, Brooklyn, died October 1918  
ADOLPH MORGENSTERN, M D, New York City, died October 7, 1918  
LEO S PETERSEN, M D, New York City, died October 22, 1918  
ALBERT C RICE, M D, Babylon, died October 12, 1918  
BRADFORD A RICHARDS, M D, Rochester, died October 22, 1918  
CHARLES RITTENBERG, M D, Port Chester, died October 16, 1918  
ELIZABETH C SLIGHT, M D, Mt Vernon, died November 5, 1918  
MYRON E STEPHENS, M D, Gardiner, died October, 1918  
IRA C WHITEHEAD, JR, M D, Hoosick, died October 26, 1918

# NEW YORK STATE JOURNAL OF MEDICINE

A Journal Devoted to the Interests of the Medical Society of the State of New York

JOHN COWELL MAC EVITT M D Editor  
FLOYD MILFORD CRANDALL, M D, Acting Editor  
Business and Editorial Offices 17 West 43d Street New York, U S A

## COMMITTEE ON PUBLICATION

S W S Tom M D Ch 1 rma N yack Edwa d L ngston H at M D New York A Clifford Mercer M D Sy a u  
W Medd ough Duoon g M D B ont Fra k Van Fleet M D New York

The Medical Society of the State of New York is not responsible for views or statements outside of its own authoritative actions, Published in the Journal

Vol XVIII

DECEMBER 1918

No 12

## EDITORIAL DEPARTMENT

### INEXACT MEDICAL WRITING

*"Don't think, but try, be patient and accurate"*

THIS was the reply of John Hunter to Edward Jenner when the latter first communicated to the great surgeon his theories regarding vaccination. The advice was scrupulously followed, and one of the greatest of medical discoveries was the result. It is a motto worthy of adoption by every student of science, particularly by every student of medical science.

The results of disregarding the advice of John Hunter are painfully evident in the medical literature of to day. Thoughtless haste, lack of personal observation, and reckless inaccuracy are too frequently apparent. The amount of unripe fruit sent into the medical market is very great. Medical literature contains too many articles based upon crude observation and inaccurate data, rendered unwholesome by illogical reasoning and personal prejudice. The profession has repeatedly suffered from attacks of grievous type, resulting from the ingestion of this scientific green fruit. It fortunately, takes it only in small amounts and does not absorb it in sufficient quantities to frequently cause serious general disturbance. Twilight sleep was one of the last instances in which it was absorbed in serious quantities.

Twenty years of editorial work has led us to be observant of medical papers and to inquire

why they are so variable in merit. This editorial considers inexact and inferior medical writing alone. We are not so pessimistic as to regard all medical writing as of this type. We are simply pointing out some errors in medical literature which do not conform with the principle laid down by John Hunter. In some future number we may point out the enormous improvement that has taken place in medical literature since 1889, when we entered upon editorial work.

One of the serious failures in accuracy of writing arises from the feeling that one will be heard for his much speaking. Many a writer has failed to make his points understood through the error of diffuseness. Many a physician has worked out a valuable point in research, in therapeutics, in technique or in clinical observation, but has utterly failed to impress it upon others. Instead of presenting his fact in definite and concrete form, he has smothered it in padding and buried it in a seven column article. If a writer wishes to make a point he should present it definitely, without extraneous matter which will befog the mind of the reader and distract his thoughts from the central idea.

This is well illustrated by the course taken by Jenner upon the advice of John Hunter, referred to as the text of this article. After prolonged study and observation, he wrote a book upon his

investigations of "Cow-pox As It Appears in the Western Counties of England" It was not a 1,200-page quarto volume, but a little book of 21 pages, of which one of the rare existing copies may be found in the library of the New York Academy of Medicine He described distinctly and without camouflage one of the greatest discoveries in the history of medicine, and left a name equal in honor to that of Hippocrates and Galen He did much, he wrote little The value of medical writing is assayed not by how much but how good

Many a diffuse and ineffective speaker is a concise and effective writer One means of attaining that desirable result may be described When the subject is selected, write or dictate everything that may be in the mind or that may occur as pertinent to it Then do three things First, select a definite title or a clear definite text Write it in clear large words, set it up before you on your desk, take your paper, a good blue pencil and mercilessly cut out everything that does not conform with the text Ability to "follow the text" is one of the highest attributes of the human mind Second, go over the various paragraphs that remain and arrange them in logical order Third, go over what is then left and study each important word and select synonyms that will best express the thought in your mind

Observance of these rules will give a physician a reputation of being a man of clear, logical mind and a master of his subject One paper carefully written upon these methods by a man with something to say will bring reputation and respect far greater than can be secured by any number of loosely written articles As a matter of fact, many a physician with a reputation of being an easy and fluent writer attains that result by careful and laborious methods

"Experience is fallacious and judgment difficult" This is as true to-day as it was when uttered by Hippocrates two thousand and three hundred years ago Conclusions drawn from experience, unless based upon accurate data, are prone to be erroneous The publication of impressions and not of demonstrated facts has been a potent cause of retarding the progress of medical science

There is one exception to this general rule It is generally realized among medical practitioners that experience is one of the most difficult

things to transmit to others A few men, however, have that ability to a certain degree A wise physician, after years of practice, may properly write upon his experiences and draw conclusions which may be of great value to other practitioners, particularly to the younger ones Men who possess this ability are those who have been close and accurate observers, who have studied carefully their cases and have been devoted to their professional work They have so long studied their cases with care that their experience is scientifically correct The number of those men is rare, but when they do write they produce some of the most valuable papers that appear in the journals

Plagiarism in its most definite form is rare, but it does occur It is a personal sin and does little harm except to the sinner, for he usually steals good material In the less tangible forms it is more common and more dangerous The writer is frequently not a master of the subject and selects the true and the false alike Sometimes he compiles his article from text-books and journals and does not present a single original thought At other times he bases his paper on a single case He compiles his material without giving credit and so presents it as to give the impression of extensive experience Not long since a physician of New York traveled a considerable distance to confer with a physician who had written an extended paper upon a subject in which he was interested As the result of his trip he found that the author had simply compiled his paper and was in a state of benighted ignorance of technique and everything else of practical nature pertaining to the subject

There is nothing necessarily objectionable in a paper based on a single case as a text If it is carefully studied and described as to the pathology, bacteriology, or clinical manifestations it may add to the sum of knowledge of a particular disease The report of a rare case may be valuable if accompanied by extended study of the literature, if proper credit is given to other reporters

The grave and serious aspect of inaccurate and untruthful medical writing is that physicians who read may be led into adopting measures that are worthless or actually harmful There is no greater sin than to write upon medical subjects untruthfully, whether it be done thoughtlessly or from criminal negligence in ascertaining facts

## Original Articles

## MULTIPLE OSTEOMA OF THE NASAL ACCESSORY SINUSES—REPORT OF A CASE COMPLICATED BY SYPHILIS, OPERATION, AUTOPSY

By WILLIAM LEDLIE CULBERT M D

NEW YORK CITY

ALTHOUGH osteoma of the nasal accessory sinuses is comparatively rare there is a considerable literature of the subject, which is, however, largely French and German. The English have reported a number of cases but, as far as the present writer knows have made no comprehensive study of the subject, the Americans also show this same lack of exhaustive treatment. Andrews' article (1887) on orbital osteoma and one by Guntz on nasal osteoma are the only ones that treat the subject extensively. There are also shorter articles by Knapp,<sup>4</sup> Fridenberg,<sup>5</sup> Van Wagenen,<sup>6</sup> Chapman and Barnhill,<sup>7</sup> and a few other case reports.<sup>8, 13</sup>

The rareness of bony growth of the orbit at least, may be judged by the fact that Andrews reported only 8 cases of orbital exostosis out of almost 430,000 cases of eye disease, or 1 in 53,700. Adamuk<sup>10</sup> makes a similar statement. In 1881, Bornhaupt<sup>9</sup> reported 49 cases of osteoma of which 23 were of the frontal sinus, 11 of the ethmoid labyrinth, 10 of the antrum of Highmore and 5 of the ethmoid and sphenoid sinuses. Hermann Knapp<sup>4</sup> in the same year reported 11 cases of osteoma of the frontal sinus of which he stated that his own was the only American case on record. Harris<sup>11</sup> in 1901 collected 63 cases, 21 of which were nasal. Gerber 1907 reported 87 true cases of osteoma of the frontal sinus. Taranto<sup>12</sup>—Paris Thesis, 1901—gave 129 cases of osteoma of the nasal accessory cavities collected from the entire range of medical literature and up to 1914 Boenninghaus<sup>14</sup> had added 74 new cases to these 129, making a total of 203. Since that time, about a dozen other cases have been reported so that to-day we have a rough total of 215 representing all the cases in the medical literature from 1748 to the present time.

Osteomata are on record as occurring from the fourth to the seventy-fourth year. Over 50 per cent are noticed during adolescence and about 30 per cent more before the thirtieth year of life. These growths are of three varieties—the hard or eburnated, the compact, and the spongy. Their dimensions, roughly speaking, range from that of a bean to that of a good sized potato. They are reported as weighing

from 7 gm to 440 gm. This latter is Hilton's case of 1¼ ounces, an osteoma<sup>15</sup> of the sphenoid and orbit, apparently the largest human case on record. In comparison we might mention an ivory exostosis of over 16 lbs weight, from the forehead of an ox, on exhibition in the museum of the College of Surgeons, London.<sup>16</sup> The extreme hardness attained by eburnated osteoma may be judged by the fact that in four cases that came to operation the difficulty of making any impression on the ivory like growth with chisel, saw, or trephine, was so great that in each case the operation had to be abandoned.<sup>17</sup> Grossman<sup>18</sup> removed one orbital exostosis by cross drilling with a dentist's burr.

Osteomata are generally of slow growth, the development frequently covering a period of ten years and sometimes much longer before the annoyance has caused the patient to seek relief. Although these tumors are histologically benign, they are clinically malignant, since if left alone they exert pressure into the cavities of the orbit and the cranium. The only treatment is complete removal. In Boenninghaus's collection the mortality of the cases operated before 1885 was 16 per cent and for those operated since that time, 3 per cent. According to Pfeiffer<sup>19</sup> in the preantiseptic era the mortality was very high, but with the introduction of sepsis improved operative technique, and recognition of the fact that an osteoma is an encapsulated tumor the mortality has greatly decreased. Hermann Knapp<sup>4</sup> stated that the safety and success of operations of osteoma not only of the frontal sinus but of all the cavities of the head lay in shelling out the tumor from within its capsule. According to him<sup>4</sup> the real element of danger occurs when there is a long prepared diseased condition of the tissues surrounding the tumor. Where this exists, the operation may be the inciting cause of meningitis or encephalitis. As chiseling through healthy bone is not dangerous the osseous tumors which develop in comparatively healthy pneumatic cavities can be removed with safety. As a matter of fact when death occurs it is usually from intracranial complications—meningitis or brain abscess—and generally in cases where projections of the tumor reach into the cranium. With early operation the prognosis is favorable.

**Classification.** According to Gerber the nomenclature of bone tumors in the older literature was often obscure and a tendency existed (a) to make no distinction between exostoses (frontal bone and orbit) and true osteomata of the sinuses, and (b) to group together all the osteomata of the ethmoid and frontal region. Gerber has classed as exostoses the cases of Lucas Kerte, Cooper (and questioned those of Hilton and Hoppe) which are elsewhere regarded as osteomata. It is also interesting that in his attempt

Hilton's case is usually considered as an osteoma. Gerber however seems inclined to class it as an exostosis.

Read at the Annual Meeting of the Medical Society of the State of New York at Albany May 21, 1918.

† These figures are cited from Chapman's (7) report of Boenninghaus article 2nd edition 1914 as only the 1st edition was available to the writer. In this edition it is stated that the cases had been collected from the literature up to 1910. They numbered 198 not 148 as misprinted in Pfeiffer's article.

to obtain a correct classification of osteomata in imperfectly reported cases, Gerber located the growth according to the dislocation of the ocular globe when the protrusion of the eye is forwards only he classifies the osteoma as sphenoidal or orbital, when the protrusion is exclusively outwards, tumor of the ethmoid is inferred, where the globe is directed upwards, the maxillary sinus is involved, while a propulsion forwards, outwards, and downwards is pathognomonic for tumors of the frontal sinus. Knapp states that the onward march of an osteoma growing in the frontal sinus must push the globe in these three directions. The X-ray is to-day our best means of information as to the form, location, and size of the tumor.

*Growth and Origin*—Osteomata may involve one sinus or cavity only, or they may develop symmetrically, involving corresponding sinuses. They may be multiple distinctive growths with apparently different foci, or they may send out projections from a single point of origin. This point of origin may be the frontal, lacrymal, or nasal bones, the nasal process of the superior maxilla, the turbinates, etc. Of Bornhaupt's 49 cases, 34 originated in the ethmoid. Gerber gives the proportion of tumors arising in the ethmoid as 12 to 8 to those arising in the frontal sinus. According to Guntzer, "in most instances the point of origin is difficult to demonstrate the weak connection with the nasal skeleton is so easily destroyed in operative manipulation, or, by pressure atrophy or pus formation, the pedicle may be destroyed and the osteoma become sessile or entirely free."

*Histopathic Origin*—Osteomata have been variously described as originating from the diploe of the frontal bone (Virchow<sup>30</sup>), as ossifications of the Schneiderian membrane lining the nasal cavities (Dolbeau<sup>31</sup>), as of periosteal origin (Sap-pek, see Dolbeau), as enchondroma (Rokitansky<sup>32</sup>), or remnants of fetal cartilage which later ossify—Arnold<sup>33</sup> and Tillmans<sup>34</sup> have elaborate theories to this effect—as originating from connective tissue rudiments (Pfeiffer), as ossifications of mucous polypi (Cloquet), as developments of the small exostoses, osteophytes, or hyperostoses of the frontal sinuses (Gerber). Cruveilhier<sup>35</sup> 1856, believed that they develop in the interior of the bone in such a manner as to push the peripheral layer of bone before them like a capsule. The question is still open.

*Sinusitis as a Complication*—Before discussing the theories of causation of osteoma of the nasal accessory cavities, it would perhaps be well to consider the complications frequently accompanying these tumors. The proportion of osteoma with and without complications is not known. Hucklenbroich<sup>36</sup> in 1905 found 6 out of 16 (37.5 per cent) of the more recent cases com-

plicated by sinusitis. These are the cases of Mitvalsky,<sup>37</sup> Coppes,<sup>38</sup> 2 cases, Tauber,<sup>39</sup> Zimmernann,<sup>40</sup> and Witzheller.<sup>41</sup> The present writer has also noted 8 others, including his own, Knapp<sup>42</sup> and 4, Satteler,<sup>43</sup> Pfeiffer, Gerber, Van Wagenen, and Chapman. Mitvalsky (p. 613) states that the granulations and the polyps of the mucus of the frontal sinus as auxiliaries of osteoma of the nasal accessory cavities have long been known, and that Virchow, who rejected Cloquet's idea that the osteoma developed through the ossification of these polyps, neglected the question whether (a) the affection of the frontal sinus precedes the osteoma and is the determining cause of its evolution, or (b) whether the affection of the sinus is merely the result of the presence of the growth in course of evolution. Coppes considers that the permeability of the naso-frontal canal has to do with the presence or not of sinusitis. When the canal is closed, the products of muco-secretion have no means of evacuation, they stagnate in the depths of the sinus, ferment and decompose there, with inflammation and suppuration of the sinuses as inevitable consequences. He assumes that the presence of the osteoma is responsible for an edematous mucosa which forms folds and obstructs the opening of the canal, together with the progressively growing osteoma.

The view that complications in the frontal sinus occurring with osteoma were inevitably direct results of the obstructing growth has been generally accepted. Gerber is apparently the first writer to consider that a sinusitis might antedate the growth of an osteoma and be a causal factor in its development. According to him latent torpid sinusitis producing inflammatory irritations is comparatively frequent in the frontal sinuses. The irritations thus produced which are capable of causing ossifications of bone or periosteum, exert their maximum influence during the period of formation of bone and development of the frontal sinuses—thus explaining the youthful age of the majority of the cases. Gerber states (1907) that up to recent times there has reigned a false conception of the inflammatory modifications of the frontal sinuses which are often due to conditions left by the many violent inflammations of the nasal fossæ. Although these inflammations of the sinuses generally disappear without leaving any traces, they may, however, persist and become true empyemas with more or less involvement of the bony walls of the sinus in the morbid process. The frontal bone itself has been affected by such lesions far more often than is generally credited. Furthermore, it is well known that such symptoms may survive in individuals enjoying excellent health.

The case reported by Chapman of frontal osteoma in a woman of 52 who had suffered from headaches for 3 years following grippe seems

to be illustrative of Gerber's argument. Doubtless, in this case, the inflammatory condition left by grippe either caused an osteomatous growth to develop, or else speedily accelerated a latent growth of such small size that it had given no indications of its presence up to the age of 52. In one of his cases, Hermann Knapp<sup>1</sup> wrote that a chronic inflammation in the pneumatic cavities of the upper part of the face had led to a distension of the left frontal sinus and rendered its osseous wall congested and porous (ostitis) with beginning necrosis. Finally, the youthfulness at which sinusitis usually develops should be kept in mind.

*Symptoms Accompanying Osteoma*—A considerable number of cases of osteoma are reported as being absolutely without symptoms except a greater or less displacement of the eye or facial disfigurement. Curiously this lack of symptoms seems to be independent of the size of the tumor, large growths have been removed where the cosmetic effect was the patient's only interest. There is, however, a whole range of symptoms which frequently accompany osteoma of the nasal accessory cavities; they include nasal obstruction, entarrh, rhinoma, difficult respiration, otorrhea, middle ear deafness etc. and are regarded almost exclusively as pressure symptoms due to the increasing injury to the surrounding parts by the morbid growth. However there are certain cases with a long history of illnesses where the probability that an inflammation of the mucous membrane antedated the osteomatous growth is very strong. Such cases make one wonder if an original infection of the tissues lining the nasal cavities had not been a causal factor in the production of the osteoma which in turn added pressure and obstruction to the original trouble.

*Osteoma in Cases of Constitutional Maladies*—On this subject the literature gives very little information, a lack of adequate examination of the patient renders many reports unsatisfactory. A few interesting cases are, however, reported. Van Wageningen had a case of frontal osteoma in a patient who previously had suffered from frambesia, a tropical disease caused by a spirillum similar to that of syphilis; he regarded the osteoma as secondary to the infection. Leone<sup>2</sup> gave an etiology of secondary syphilis in a case of nasal osteoma in a man of 54 who had contracted syphilis at 26 followed by secondary syphilis, with much coryza and articular rheumatism at 40. There was no other cause. Gerber also reports an etiology of syphilis in one of his cases of frontal osteoma. Dolbeur reported a case of frontal osteoma in a man of 21 with a long history of illnesses including typhoid and blennorrhoea. There are other similar reports. Many of the former writers have stated that there was no question of syphilis in their cases but we

might pertinently ask, 'How did they know?' The fact that anti-syphilitic treatment did not decrease the osteomatous growth is no proof of the absence of specific disease.

*Etiology*—The writer has just considered briefly certain conditions possibly contributing to the development of osteoma before reviewing still more briefly the many and confusing hypotheses furnished by the literature. Historically, there are three general theories: (a) the first and oldest theory that of trauma as a primary cause is obviously the result of the fact that a number of the earlier cases were complicated by external injuries—falls or blows. At the present time traumatism is generally regarded as a contributory rather than an essential cause since many cases have been observed where there had been no trauma and also because of the nature of the growth, which may be symmetrical or multiple. However, a number of fairly late writers, Dubrion<sup>3</sup> Taranto and Miodowski<sup>4</sup> still are inclined to believe that osteomatous growths can be traced to external traumatism. (b) The second and most widely held theory is that of an embryonic genesis—an anomaly of growth, a congenital fault—which as previously stated various writers have located in bone, periosteum, fetal remnants, etc. Given certain circumstances—a perfectly healthy individual, without constitutional disease without sinusitis or lesions of the nasal tissue with no history of traumatism, at a youthful age, particularly at adolescence when the growth in the frontal region is greatly accelerated—and this theory affords a satisfactory explanation of the development of osteoma. Under such circumstances Cottle<sup>5</sup> attributes these growths to an ontogenetic or morphologic lack of balance in the rapidly growing osseous elements, aided by a more or less congenital predisposition. (c) The third theory is Gerber's intermediary theory according to which a mechanical cause—external traumatism—or an inflammatory process—sinusitis or lesions of the mucous membrane of the nasal accessory cavities—may provoke or stimulate otherwise quiescent incipient foci of development to active growth.

In conclusion the writer summarizes his own beliefs on this subject of etiology as follows:

- (a) In cases of osteoma of the nasal accessory cavities there is in all probability an original fault or tendency, congenital in the individual.
- (b) Such faults or tendencies when not irritated to activity often probably remain quiescent and never develop.

\*The fact is a possibility that abnormalities of bony growth—osteoma exco—do occur in a certain type of person, one possibly in whom the organs of internal secretion, pituitary thyroid, adrenals cannot maintain a proper balance. The writer is inclined to note in his two cases of osteoma—the one reported here and another under observation—not yet operated upon—that one man of 41 of great physical vitality had the osseous growth of a child while the other a girl of 11 (referred to me through the courtesy of Dr Martin Cohen) had the physical development of a mature woman.

(c) Conditions likely to activate osteomatous growths are

1 The great neoformative activity in the frontal regions during adolescence

2 External traumatism

3 Endogenous irritations inflammations and infections of the nasal accessory cavities i.e., the sequellæ of grippe, influenza, and the whole range of naso-pharyngeal affections. These conditions are probably the most frequent cause of trouble

4 Constitutional maladies, particularly syphilis and possibly other infectious diseases

5 Above all, combinations of these different causes, of the effect of such combination, the literature furnishes many examples

#### REPORT OF A CASE

In July, 1917, Dr C W Cutler referred a case to me, in which a hard mass growing outwards, forwards, and downwards apparently from the junction of the frontal and ethmoid had produced a marked displacement of the right eye and partial closure of the lumen of the right nostril. Dr Cutler's report reads: Rt eye separated 41 mm from median line, left eye, 32 mm. Rt eye displaced  $3\frac{1}{2}$  mm outwards,  $3\frac{1}{4}$  mm downwards. Moderate exophthalmos, no diplopia, motility apparently normal. Vision in rt eye 20/20, in left, 20/15. A tentative diagnosis of osteoma of the right orbit was made. The first X-ray plates showed a mass involving both frontal sinuses and the ethmoid and protruding into the right orbit with dislocation of the right middle turbinate toward the median line and consequent partial occlusion of the right nasal cavity.

The patient, an Italian, a chauffeur, aged 43, stated that for the past seven years he had noticed a hard mass growing in the inner angle of the right eye. Other than this growth, he was enjoying the most robust health, and was a man of extraordinary vigor and muscular strength with no history of illnesses. Nevertheless, a Wassermann taken as a matter of routine at the time of examination showed 4+. Consequently, several injections of oxycyanate of mercury were given not with the hope of reducing the growth, but to assist the healing of the tissues after operation. The only treatment for the osteoma was surgical.

First operation, July 25, 1917 (Dr C W Cutler present). Procedure: Killian incision on rt side, elevation of scalp, entrance into frontal. The outer table was partly absorbed and quite thin, immediately underlying it was an enormous, irregularly-shaped, eburnated osteoma, which because of its extensive size was more or less flattened from before backwards. It filled the unusually deep right frontal sinus antero-posteriorly and extended for a considerable distance into the left, with complete destruction of the septum.

The patient's frontals were enormous, and that part of the tumor lying in them alone was larger than the average frontal sinuses.

In order to approach the growth from above, a transverse incision directed outwards and upwards from the original incision was made above the left eyebrow, and the outer table of frontal bone was removed over the left frontal sinus. When the osteoma was entirely uncovered, it was apparent that the growth came from or extended into the ethmoid and also into the right orbit. Consequently it was furthermore apparent that it would be impossible to get it out without removing the inner two thirds of the right supra-orbital ridge, which was accordingly done. When the osteoma was thus uncovered so that its outlines could be clearly seen, we found that we could not enucleate or even rock it, and it was necessary to bite it out piecemeal with large rongeurs with the expenditure of great force. In removing the tumor from the frontal sinuses, we discovered that it had eroded through the inner table of the skull, and the dura, which was very thin and apparently adherent, was torn in manipulation, allowing the escape of cerebrospinal fluid. The wound was covered with iodine gauze and the operation proceeded.

Pus was encountered in the recesses of the frontal sinuses beyond the margins of the tumor, of this pus, several cultures were taken which later proved sterile. When the pus and the granulation tissue were cleaned away, the tumor was bitten down to the top of the orbit, and a portion as large as a grape shelled out of the orbit. The osteoma in the orbit seemed to be a continuation downwards from the solid frontal growth and also to be in close articulation with the osteoma of the ethmoid.

After we had removed this portion of the eburnated tumor, we noticed that the bone at the base of the frontal sinus and at the lower part of the inner table was of unhealthy appearance—fibrous or cancellous in character. Although Dr Guntzer states that in the hard variety of osteoma, the place of attachment is usually soft or cancellous, nevertheless, in this particular case, I regret that I did not have some of this bone examined for smitochaeta.

The first operation was concluded without opening the nose, since, because of the torn dura, there was fear of cerebral infection. The frontal sinus was packed lightly and the wound sewed up, leaving an opening for drainage near the median line at the inner extremity of the supra-orbital ridge, as no drainage could be established through the nose. The patient ran the usual post operative temperature for three days, and proceeded to a slow and uneventful recovery. In September Dr Cutler stated that the displacement of the eye outward was slightly increased. Vision 20/30. Later, in December, Dr Cutler

reported, vision 20/20, fundus normal lateral displacement of right eye same as left namely 32 mm. Very slight displacement, if any, downwards. Pupils always equal normal reaction. Occasional complaint of diplopia in distant vision, but not annoying. Return of eye to normal position and function.

During convalescence, the patient received various active anti-specific treatments—intravenous injections of salvarsin, injections of mercuric salicylate, and oxymercurate as well as potassium iodide. Later, he received anti-specific treatment at Hot Springs, Ark., where upon his arrival the Wassermann was said to have been 1+ but on his return to New York, three months later, in December, a second Wassermann again showed 4+. Further X-rays, including a stereoscopic pair, were taken at the Manhattan Eye Ear and Throat Hospital, and from these latter it was revealed for the first time that the bony growth extended into the cranial cavity. Realizing that it would be impossible to remove all of the growth, I consulted with various colleagues as to the advisability of further operative procedure. It was decided to be wise and justifiable to remove as much as possible of the growth from the ethmoid and establish free drainage from the frontal into the nose. This decision was strengthened by the amount of pus constantly present.

Second operation Jan 8, 1918. Line of old incision reopened and extremities of two former lateral incisions extended. Scalp retracted, frontal sinuses exposed, very thorough cleaning out of pus. The opening into the dura had granulated over and was carefully avoided. With a Killian chisel an opening was made through the lacrimal bone in order to enter the ethmoid but when the lacrimal bone was removed the hard eburnated tumor presented and no progress could be made towards the ethmoid. Therefore, the right middle turbinate was removed as a whole intranasally. During this removal two small nuggets of ivory like bone dropped out of the mucosa of the middle turbinate body. The way was now cleared for entrance into the ethmoid which was the seat of several medium sized osteomata which formed a sort of interlocking combination with closely articulating faces. After these were removed, there yet remained one more flat wedge shaped growth—hard and glistening—on the right side of the ethmoid which, from its solidity and impregnation as well as the X-ray findings, I realized extended into the brain, this piece was left in, for fear of trauma to the ependymal plate and the meninges. Finally there was cleaned out from the cancellous tissue a little fistula containing pus, which lay in the median line just above a line connecting the supra-orbital ridges. Examined with a probe the fistula seemed to have a soft resilient base

which, when the lumen of the fistula was enlarged and the pus cleared away, proved to be the longitudinal sinus.

As free drainage had been established from the frontal sinus into the nose through the enlarged infundibulum, the wound was sewed up, after a huge cigarette drain had been placed through the infundibulum and out through the nose. In addition to this, a cigarette drain was also placed at the outer extremity of each of the frontal sinuses, to take care of the numerous and extensive recesses requiring drainage.

In the wound near the inner canthus of the eye several stitches unfortunately did not hold, and because of the pus, tore through the tissue. Later, this opening was utilized together with those of the extreme lateral ends of the sinuses, to wash through the frontal sinuses with Dakin's solution, and yet later to instill dichloramine-T.

The patient recovered from the operation and was in good condition. He was bright, cheerful, talkative, enjoyed going out to the movies, etc. It was impossible, however, to eliminate entirely the pus discharge from the wound, even by the frequent use of dichloramine-T, with which Dr. E. K. Dunham kindly furnished me, although this did cut it down markedly. On February 21, for the first time, the patient complained of severe headache which kept him awake at night. Medication gave little or no relief. He became progressively worse and more apathetic. A white cell and differential count made at this time showed 21,600 leucocytes with 78 per cent polynuclears, a later count showed 16,000 leucocytes, with 70 per cent polynuclears.

On the morning of March 2, while sitting up, he suddenly fell over unconscious and after this he did not talk again. He could be roused at times, but answered questions only by shaking his head and at noon of the next day March 3 he died.

The autopsy was performed March 4 at 1 P. M., by Dr. J. G. Dwyer. His report follows: Usual post-mortem technique. Skull cap removed, on both sides of vertex in both parietal bones there was marked rarefying osteitis which had almost penetrated the skull on both sides. Dura slightly congested but otherwise normal except in region corresponding to above bony lesions, where marked infiltration of dura took place with formation of granulation tissue.

**Brain examined in situ.**—Marked loss of tissue of both frontal lobes, especially on anterior under surfaces where large brain abscesses with degeneration of all surrounding tissue occurred. About 3 ounces of pus evacuated from right lobe, and 2 ounces from left. Cultures taken and proved sterile after 6 days. General appearance of brain as a whole suggestive of "wet brain."

*Bone*—Leading from site of the operations to right side was a marked infiltration of posterior inferior wall of the frontal sinus with newly formed bony tissue<sup>††</sup>. This new tissue had formed spicules, some of which had penetrated the dura and the frontal lobe, and led to the brain abscess, which was probably secondary in character to the bone invasion. A similar but less extensive condition prevailed on the left side. The crista galli, left superior turbinate, and surrounding bone had been replaced by newly formed hard osteomatous tissue. Antra and other parts of head negative except for obliterating endarteritis. No invasion of orbits *per se*.

At my special request, Dr Dwyer had numerous sections of the brain, dura, and portions of the osteomatous bone prepared and examined to see if spirochæta could be detected. He returned the following histological report:

*Large mass of osteoma* typical appearance of osteoma, with exception of marked fibrous tissue infiltration within the cortex, separating the osteomatous tissue proper. This is unusual in osteoma of the primary type and leads to the belief that the osteoma may be secondary to, or caused by, syphilis. *Dura* over frontal lobes, in contact with rarefied parietal bones, show a typical syphilitic process with giant cells and marked cellular infiltration. *Turbinate bones* the superior on left side markedly hardened, osteomatous in character, shows same infiltrating processes as those of large mass described above. Middle turbinate on right side process here is less extensive, consisting simply of a round cell infiltration of a small part of the turbinate. (As previously stated, two small osteomatous nuggets dropped out of the mucosa of the right middle turbinate during operation.) Histologically, the osteoma as a whole is multiple, as the different parts affected are not connected with each other. It is a question whether there is a primary osteomatous condition, complicated by syphilis or an osteomatous condition secondary to syphilis.

#### Summary

1 The growth just described was a multiple eburnated osteoma involving the frontals, ethmoid, right orbit, middle and superior turbinates and crista Galli and protruding into the cranial cavity. The thickness of the cortex judged from measurements of one or two of the larger pieces removed, varied from 2 to 12 mm. As this osteoma was so large and involved so many sinuses, it was impossible to remove it as a whole, so that no exact size shape measurements nor weight could be obtained; consequently the size must be determined as far as possible by measurements of the shadows in the X-ray plates. In these, Dr F. M. Law gives the following dimensions:

Transverse diameter in the frontal region, 70 mm, antero-posterior diameter, in the ethmoid region, 40 mm, in the frontal region, 20 mm. Vertical diameter, 60 mm. A later X-ray gave the measurements from the cribriform plate, downwards and forwards, 45 mm. Within the cranial cavity, above the cribriform plate, the shadow seemed to extend upwards about 20 mm.

2 In the frontal sinuses and the right orbit, this osteoma was one solid, continuous growth, but in the ethmoid region, it was composed of several nuggets, some of whose faces articulated so perfectly that literally speaking, a hair could not have passed between them. They resembled the tight over-lapping of peanuts in a shell. (In a similar growth, Tauber uses a cauliflower as a comparison.) In the operation, the result of this articulation was that when a part of one face was bitten off, the combination was unlocked with liberation of the remainder of that portion. These peculiarities of growth seem proof—to the author, at least—that this multiple osteoma had several foci, which were, possibly, the frontal sinus, the junction of the frontal and ethmoid, the ethmoid, and the turbinates,—and that all these different simultaneous growths were finally jammed and moulded together.

3 *Etiology* This growth certainly covered a period of ten years and probably a much longer one. In a histological report which Dr Jonathan Wright<sup>‡</sup> was kind enough to make on slides of the osteomatous bone from the first operation, he states that the Haversian canals were markedly enlarged with a proliferation in them of an embryonic connective tissue or perhaps the remnants of the processes of the giant bone cells. It is probable that this osteoma found its origin, as many authors believe, in some embryonic growth-fault in the fronto-ethmoidal region. But one may ask what irritation caused so excessive a production and formation? It is impossible to determine whether the sinusitis of many years' standing had ante-dated the osteoma, and acted as a stimulant for its growth, although that is a distinct possibility. It may be said, however, with very great certainty, that the osteomatous condition if not secondary to the syphilis was greatly aggravated by the acquisition of syphilis.

4 The necessity of early treatment cannot be too strongly stated. Reports of similar cases show that so good a subject as the patient had every chance of recovery if the operation had been performed before the growth had invaded the cranium.

<sup>‡</sup> Dr Wright's opinion was given on slides from sections of the first operation before the autopsy report had been made. He inclined to the opinion that the growth was an osteosarcoma without however ruling out the possibility of osteoma with syphilis.

<sup>††</sup> At the base of the cancellous tissue.

5 Although at autopsy an abscess was found in each frontal lobe, no sign or symptom referable to them had presented during the patient's life, with the possible exception of the last few days

6 This case, in which the patient enjoyed extraordinarily good health nevertheless revealed sinusitis and syphilis both of long duration. As the literature shows a good many cases in which, because of the patient's excellent health no Wassermann was taken, the present writer would like to urge that no means of examination be left untried for patients in whom an osteoma of the nasal accessory sinuses is detected

# BIBLIOGRAPHY

- 1 Andrews J A, Successful Removal of Two Osteomata of the Orbit One Originating in the Frontal the Other in the Ethmoid Cells *Med Rec* 1887 XXXII 261
- 2 Guntzer, J H, Nasal Osteoma Report of Case, *Operation Med Rec* 1910 LXXVIII 12
- 3 Knapp H The Exostoses of the Frontal Sinus *Trans Med Soc St N Y* 1891 244
- 4 Knapp H, A Case of Ivory Exostosis of the Ethmoid Cells, *Arch Otol* 1884 XIII 51
- 5 Fridenberg, P Orbital Osteoma of Ethmoid Origin Perforation of Orbital Roof and Exposure of Frontal Lobe Operation Recovery *Trans Am Ophth Soc* 1903 X 83
- 6 Van Wagenen C D Post Operative Double Frontal Sinusitis, Extensive Osteoma of Frontal and Nasal Bones and Orbital Fossa with Superimposed Lipoma Causal Factor, Frontocephalitis (Laws) *Laryngoscope* 1911 XXI, 643
- 7 Chyppman V A Osteoma of the Frontal Sinus *Jr Mich St Med Soc* 1916 XV 18
- 8 Barnhill J F Unusual Case of Large Osteoma of Frontal Sinus with Complications Read at the Cong Am Laryngol Ass 1918 (To be published shortly)
- 9 Mott H B, Case of Exostosis occupying the Orbit and Nasal Cavity, *Am Jr Med Sci* 1857 XXXIII, 35
- 10 Jackson E Osteoma of the Orbit *Jr Am Med Ass* 1892 XIX 299
- 11 Lewis F N, Osteoma of the Orbit *Med Rec* 1893 XLIII, 654
- 12 Pooley, T R The Removal of a Large Exostosis of the Orbit, *Trans Am Ophth Soc* 1890 V, 611
- 13 Sittler R Ivory Exostoses of the Orbit *Trans Am Ophth Soc* 1896 VII 553 Supplementary Report *ibid* 1897 VIII 70 Exostosis of the Orbit and Frontal Sinus *Cincin Lancet Chur*, 1897, XXXVIII 137
- 14 Sittler R A Case of Unilateral Proptosis, etc *Arch Ophth* 1918 XLVI 168
- 15 Norris W F An Ivory Exostosis of the Orbit *Tr Am Ophth Soc* 1897 VIII 67
- 16 Veasey C A Unusually Large Osteoma of Frontal Ethmoidal and Sphenoidal Sinuses Involving Orbit and Anterior Cerebral Fossa *Ann Ophth* 1916 XXV 699
- 17 Probert C C Osteoma of the Frontal Sinus *Jr Mich St Med Soc* 1916 XV 304
- 18 Coffin L A Osteoma of the Ethmoid *Laryngoscope*, 1917, XXVII 525

- 19 Adamak Three Cases of Bony Orbital Tumors *Arch Ophth* 1890, XIX 243
- 20 Bornhaupt T Ein Fall von linksseitigem Stirnhöhlen Osteom *Arch klin Chir*, 1881, XXVI 589
- 21 Haas, E Ueber die Osteome der Nasenhöhle, *Bstr klin Chir* 1901 XXXI, 139
- 22 Gerber P H Les Osteomes du sinus frontal *Arch Internat Laryngol Otol-Rhinol*, 1907, XXIII 17
- 23 Taranto I M de Les Osteomes de l'orbite (Thesis) Paris 1901
- 24 Boenninghaus Die Operationen an den Nebenhöhlen des Nasen Handb d spez Chir d Ohres u oberen Luftwege, 2nd Ed Wursburg 1914 III 234
- 25 Hilton Case of Large Tumor in Face *Guy's Hosp Reports*, Lond 1836 I 493
- 26 Paget, Sir J, Lectures on Surgical Pathology Lond 1853 II 234
- 27 Tweedy J On a Case of Large Orbital and Intracranial Ivory Exostosis *Royal Lond Ophth Hosp Reports* 1880 82, XIII, 303
- 28 Grossman K, An Ivory Exostosis of the Orbit Removed by Drilling *Ophthol Re* 1887, VI, 341
- 29 Pfeiffer, W Ein Fall von Osteome und Mukozelen des Sinus frontalis mit Perforation der Zebrenalen Wand *Zeit Ohrenheilk* 1912 LXII, 225
- 30 Virchow, Die Krankhaften Geschwulste Berlin 1864 65 II
- 31 Delbeau Memoire sur les Exostoses du sinus frontal Paris 1871
- 32 Rokitsansky, C Handb'd path Anat, Wien 1844 II 210
- 33 Arnold J Zwei Osteome der Stirnhöhlen *Ir chn's Arch path Anat* 1873 LVII 145
- 34 Tillmans H Ueber todtte Osteome der Nasen und Stirnhöhle *Arch klin Chir* 1885, XXVII 677
- 35 Cruveilhier J, Traite d'anatomie pathologique Paris 1856 III 871
- 36 Hucklebroich, P Ueber einen Fall von Osteom nebst Mucocoele der Stirnhöhle, Inaug diss Freiburg 1905
- 37 Mitvalsky Recherches sur les tumeurs osseuses de la region orbitaire *Arch d'ophthal*, 1894 XIV 593
- 38 Coppez H Six cas d'osteomes du sinus frontal *Arch d'ophthal* 1895 XV, 279
- 39 Trauer Ueber Stirnhöhlenosteome *Chirurgia*, 1898 VII 41 (Moscow) *Ref Centralbl Chir* 1898 XXV, 775
- 40 Zimmermann H Ein Osteom des Sinus frontalis *Deut Zeit Chir* 1900 LVII 354
- 41 Witzheller J Ueber einen Fall von spongiosom Osteom der Stirnhöhle Inaug diss Greifswald 1900
- 42 Knapp H Beschreibung eines Fall von elfen beinerner Orbitalexostose *Arch Ophthal*, 1861, VIII 239
- 43 Leone Osteom eburnat al fosei nasale drepte, *Spitolul Bucuresti* 1893 XIII 81
- 44 Dubar E Des Osteomes des fosses nasales et des sinus voisins (Thesis) Paris 1900
- 45 Mirowski F Knöchernen Orbital Tumoren Inaug diss Breslau 1900
- 46 Citelli S Gros Osteome primitif du sinus frontal *Ann d mal d'oreille du larynx etc* 1913 XXXV 483

# Discussion

Dr JOHN MCCOY, New York City This case is a very interesting one and very thoroughly presented by Dr Culbert The condition must be exceedingly rare I have never seen one myself I have had three cases referred to me that were supposed to be osteoma The patients had

similar symptoms to the Doctor's—the eye was pushed out and the tumor projected into the orbit. In two of those cases we had X-rays taken and it showed considerably less density than one would expect in an osteoma, and my diagnosis was a mucocele involving the ethmoid frontal and sphenoid and on operation it proved to be such. My diagnosis was based on the fact that the X-ray showed not the dense bone we saw in the X-ray here, but a considerably less density. Another case that I saw was one that was a supposed osteoma growing into the orbit from the ethmoid cells, and later after operation developed to be an osteoma sarcoma.

I heard of a case in which a child had an ivory-like structure in the nose. The surgeon started to chisel in the nose and must have struck an orbital vessel, with the result that there was a tremendous hemorrhage in the orbit, and eventually I think that child lost its eye as the result of pressure from the hemorrhage, possibly sepsis intervened—I didn't hear the particulars. But here was an osteoma, one of these ivory-like growths, in a child in which operative procedure resulted in this destruction.

Dr W LEDLIE CULBERT New York I don't think there is much further to say except that in all osteomata, whatever their type the proper procedure is early and complete removal.

In Dr Coffin's case, reported to the Academy of Medicine last year, there was an entirely encapsulated tumor, involving various nasal accessory sinuses, but not as yet extending beyond the confines of the accessory sinuses and it was possible for Dr Coffin to remove the growth radically en masse. In the case that I am presenting the growth had already extended beyond the confines of the accessory sinuses obtruding through the cribriform plate in one place there were two sharp spikes growing upward with a mass of gummatous bone below them, and in addition a couple of polypi extending out into the middle line of the cranial cavity. Of course removal of these growths involving the cribriform plate was utterly out of the question. In order for the surgeon to be of any benefit in cases of osteomata of the nasal accessory sinuses, he must see the patient before the growth has entered the cranial cavity.

The other case that I spoke of, a girl of 11 years, Dr Martin Cohen was good enough to turn over to me. The child had developed the large osteoma which Dr Law has shown on the screen. This growth from the X-ray plate, seems to be entirely encapsulated, but the bulging of the capsule appears not to penetrate, but rather to push in or to encroach upon the cranial cavity just anterior to the sella tursia and to compress the sella. This pressure of the sella possibly may account for the child's abnormal physical developments.

## PRIMARY MALIGNANT NEOPLASMS OF THE LUNG AND PLEURA.

By MAURICE PACKARD, M.D.,

NEW YORK CITY

**S**INCE my late publication on Primary Malignant Neoplasms of the Lung, there has been quite a number of added case reports on this condition.

This is probably due not because pulmonary cancer is more frequent, but on account of the greater efficiency of diagnosis and renewed interest into the domain of intrathoracic surgery.

The difficulty which has been encountered in attempting previously to establish an early clinical diagnosis of primary cancer is well known to the old clinician and it has been amply emphasized by many observers.

The difficulty was due to the similarity of symptoms between such a cancer, especially in its early stages, and many other intrathoracic conditions, such as tuberculosis, unresolved pneumonia, pleuresy with effusions, pulmonary lues, and thoracic aneurisms.

From a clinical standpoint, pulmonary cancer can be divided into three main groups.

(a) Those originating in the pulmonary tissue, or more correctly in the alveoli occupying more or less the whole lobe or even the entire lung.

(b) Those beginning in the larger bronchus and affecting those adjacent portions of the pulmonary substance which are in the neighborhood of the hilum involving and spreading from the root to the periphery. These cases are more numerous and are very often confused with mediastinal glandular tumefaction. Besides showing the symptoms of mediastinal pressure and of overcrowding the intrathoracic area, these are accompanied by intense pain and embarrassment of respiration.

(c) Cancer wherein the symptoms are marked by the signs of pleurisy with effusion, so pre-dominant, that the underlying cause is actually obscured.

As to the physical evidence, the first named presents a variety of classical signs. Change in percussion is not considered an early manifestation, but if light percussion is used, dullness or flatness will be elicited sooner than reported. Auscultation, however, in contrast to conditions in tuberculosis or pneumonia, will show a diminished breathing. Pleurisy with effusion can be easily excluded by the aspirating needle, and it is certainly suggestive of cancer if increasing dullness accompanied by diminished breathing occurs in the upper and anterior part of the

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 23, 1918.

chest. This peculiar combination is due, as a rule, to an obstruction of the bronchus by the tumor, causing an added atelectasis of that portion of the lung fed by the affected bronchus. As the tumor grows, degeneration of various kinds may make its appearance, irregular excavation will naturally result. In one of our cases we had all the signs of a cavity, such as metallic rales associated with tympany and amphoric breathing. The diagnosis of tuberculosis and abscess of the lung was seriously entertained, but the absence of tubercle bacilli in the sputum on repeated examinations aroused our suspicion of a cancer. These degenerative processes are nearly always accompanied by night sweats, high fever, and hemorrhages. Another auscultatory sign of great diagnostic value described by Bhier and emphasized by Dr Isaac Adler was the so-called carriage\*. This is similar to the sound produced whenever the trachea is partially obstructed, and is heard in all classes of pulmonary cancers. This sign is sometimes noted in bronchitis on account of the plugging of the bronchus by tenacious mucus, but in contradistinction to cancer it is of course, not persistent.

If the disease has lasted some length of time, demonstrable alterations in the thorax may be observed. There will be an asymmetry of two halves, either in regard to their dimensions or to the degree of curvature. If the lesion attacks the lower or middle lobe, there will be, as in pneumonia and pleural exudates, divisions in the circumference of these parts but if the upper lobe is affected, as more frequently happens, there will be an alteration in the thoracic arch. Of the first class the following case is somewhat typical.

Case 1—The patient male, aged 53 years, was referred to me by Dr Berlinger November, 1914, with the history of having had grippe four years before. Since that time he had had frequent coughing spells, with expectorations, particularly in the morning. He was a junk dealer, and consequently inhaled much dust. On June 8, 1914, the patient for the first time expectorated blood, after that he had a number of hemorrhages, and stated that at one time he had coughed up as much as cupful of blood and pus. He had frequent chilly sensations and afternoon fever. During the last three months he had lost fifteen pounds in weight. His appetite had been poor for six months. He complained of pain in the right side of the chest, in the region of the third and fourth rib which had gradually been increasing. This pain had become so severe that it caused him to stop work in August and he had not been able to resume it since. There was no history of tuberculosis or cancer in the family.

Adler Primary Malignant Growths of the Lungs and Bronchi

To recapitulate the principal complaints we found

- 1 Pain in right side of chest
- 2 Cough with copious blood expectoration
- 3 Weakness and loss of weight

Physical examination showed a much reduced individual, frequent coughing with expectoration, breath fetid, tongue coated. The glands in the neck were not enlarged. The pupils were equal and reacted promptly. The last phalanges of the fingers were clubbed and enlarged (pneumarthropathy). The pulse was 120. The respiration was 24 to 28, temperature, 99.

Lungs—The anterior upper lobe of the right lung presented complete dullness from the clavicle down to the third intercostal space, and from this point downward the percussion sound was reduced. The same complete dullness existed posteriorly to a level of the sixth dorsal vertebra and from there on relative dullness down to the base. The vocal fremitus was increased.

Auscultation of the ant upper lobe showed breathing sound sub bronchial in character. Posteriorly over the upper area loud riles and sub-bronchial breathing were noticeable. Below the same conditions existed as anteriorly. Vocal fremitus was normal.

In the left lung only a few slight rales were heard. The heart sound was accelerated, low but clear.

The sputum was mucopurulent and mixed with blood, no tubercle bacilli and no tumor cells were found but many flat epithelial and red corpuscles, few leukocytes, no hemitoidin crystal.

The Wassermann test proved negative.

The urine contained urates and oxalate crystals.

The roentgenogram (which will be described later) showed circumscribed shadow in the right upper lobe. On repeated examinations the same conditions were found. The temperature mounted higher in the afternoon, ranging from 99 to 105.

The diagnosis of carcinoma of the lung with degenerative changes in the growth was made. On account of the agonizing pain the patient demanded relief and was submitted to an operation on January 23, 1915, at the German Hospital, by Dr Willy Meyer.

A growth was found at the apex and upper lobe. The tumor had penetrated the pulmonary pleura and had grown diffusely into the surrounding soft parts. The tumor could not be eradicated. The patient stood the operation nicely, but twelve hours later developed pulmonary edema, to which he succumbed.

In the second class of primary cancers those which attack the root and hilum of the lung a

number of symptoms are noted, which are mainly due to pressure on the neighboring structures. Closely allied to the resulting symptoms of this type of pulmonary cancer are the signs of thoracic aneurysm, esophageal tumefactions and enlarged mediastinal glands.

Venous obstruction with its picture of dilated veins of the neck, thorax, upper arms, and abdominal walls, associated with edema, is of course, well known. Particular attention to the venos, azygos major, is paid by Roberts,\* who cites the case of a boy, wherein at first a diagnosis of acute Bright's disease was made, because of general anasarca, etc., but later, after more careful examination the effusion in the peritoneal cavity was found to be much less than the effusion into the abdominal walls and lumbar region. This naturally led him to the proper diagnosis, as these parts are drained by the intercostal and lumbar veins which empty into the azygos major. One of my cases was considered by several clinicians as one of cirrhosis of the liver because of the so-called caput medusa and general abdominal edema. Here the peritoneal edema was quite insignificant as compared to that of the abdominal walls.

Respiratory obstruction by narrowing of the air passages was an early symptom in my cases.

The dyspnea is more intense, especially upon exertion, than in other pulmonary conditions.

Difficult deglutition because of an esophageal pressure is often experienced.

Pressure on the nerves in many instances may cause the first indication, leading the patient to seek medical advice. The nerves which are usually involved are the phrenic, the intercostals, the vagus, or the recurrent laryngeals and the sympathetic, thus irritation of the sympathetic may lead to an exophthalmos, or even more commonly to an inequality of pupils. Pressure on the recurrent laryngeal may lead to paresis of the vocal cords. Although in aneurysm this is a common sequel, affecting the left recurrent laryngeal only, in cancer both recurrences as a rule are involved.

Pain in this class is extremely intense. The various distributions and intercommunications between the phrenic, the sympathetic, the intercostals, and the cervicals may cause a wide shifting of the referred pain to various localities. The sternum, nape of the neck, and the shoulders represent the most frequent sites. Roberts† calls attention to pericarditis as a symptom of mediastinal neoplasm. In none of my cases was there a pericarditis but Roberts maintained that pericarditis in the old is as pathognomic of mediastinal cancer as pericarditis in the young is of rheumatism. Besides these symptoms a more or less extensive area of dullness over the lungs

must be present. In three of our cases these peculiar phenomena were accompanied by changes in the respiratory sounds. These zones of rapidly changing dullness are due to the atelectasis which is produced and followed by the lung becoming pervious to air again. The following, which case has already been reported by Dr. Adler, in his monograph on Tumors of the Lung, and by the author in *Medical News* is typical of this type and another case of this variety will be shown on the screen.

Case II.—The patient (P. C.), aged fifty-five years, a cigar-maker, gave the following history. No trace of cancer or tuberculosis in the family. He denied lues and venereal infection. Five years previous to coming to our clinic he had experienced pain in the right side of the chest, with unproductive cough. Two years previous to his presentation at the clinic he began to suffer from dyspepsia on slight exertion. The pain and the cough became more harassing and the patient's expectoration became first mucopurulent and finally blood-tinged. On several occasions he had a genuine hemoptysis with the expectoration of eight ounces of pure blood. There was no fever nor night-sweats, nor change in voice. The appetite was good, the bowels were regular, and during the entire course he maintained his normal weight.

Physical examination revealed the following:

Fairly well-nourished man, with normal subcutaneous adipose tissue, 5 feet, 5 inches in height, and weighing about 130 pounds. The conjunctivæ were rather pale and there was slight edema underneath the eyes. Complexion was somewhat livid. No enlarged glands could be felt in the cervical, axillary, epitrochlear or inguinal regions. Both jugulars were enormously dilated and tortuous. Superficial veins of the chest and upper portion of the abdomen, especially on the right half of the trunk, were also greatly dilated and tortuous, standing out well above the surface of the skin and forming a huge caput medusa. A very slight superficial edema on the right chest was evident. The space above the clavicle was rather full. Respiratory motion was markedly reduced in the right thorax. Careful measurement of the thoracic arch showed no difference in diameter between the right and the left side. Apex beat of the heart was not visible, but faintly palpable in normal position. Absolute flatness was found over the whole right chest, extending from the axillary line forward from the clavicle and downward beyond the sternum and emerging over the superficial area of cardiac dullness. Over this area pectoral fremitus was completely absent. The voice was diminished. The breathing was faint, distant and sub-bronchial in character. There were no rales. On the portion of lung adjacent to the dullness, expiration was harsh and prolonged.

\* *Lancet*, December 21, 1912, p. 1714.

† *Loc. cit.*

The right lung posteriorly and all of the left lung showed no essential changes. An aspirating needle introduced into the area of dullness seemed to enter solid material. The heart sounds were rather feeble but there were no murmurs. There was no accentuation of the second pulmonary sound. Heart dullness did not extend beyond the left maxillary line. The radial pulse was fairly soft and regular and of the same volume on both sides. The liver and spleen were enlarged, no abnormalities could be detected in the abdomen. Reflexes were normal.

The examination of the stomach contents after a test meal showed free hydrochloric acid and the absence of lactic acid. The tube went down with difficulty.

Blood examination made a few days later showed hemoglobin, 62 per cent, red cells 3,989,000, white cells, 14,000. Differential count gave polymorphs, 54 per cent, lymphocytes, 34 per cent, large mononuclears, 85 per cent, eosinophiles, 35 per cent, thus showing a preponderance of lymphocytes and a slight leukocytosis. Red cells stained evenly, but were not equal in size. Microcytes and pear-shaped cells were abundant, but there were no nucleated cells, no poikilocytosis, and no stippling. The repeated examinations of the urine showed no noteworthy change. Temperature was normal, pulse about 80, and respiration at rest 28. Numerous and most searching examinations of the sputum were made. At no time could tubercle bacilli, elastic fibers or particles of tumor be found. Careful search for actinomycetes, streptothrix and other abnormalities proved negative.

From the facts just stated it seems evident that we had to deal with some form of neoplasm involving the right chest and the anterior mediastinum and compressing the large veins, most probably the superior vena cava. The fact that cough and pain in the right chest had been the first symptoms and had appeared five years before, and further the fact that, according to the patient's repeated statements and assurances, the dilated veins and edema were of comparatively recent date, necessarily led to the assumption of a primary neoplasm of the right lung that gradually involved in its growth the anterior mediastinum with its contents.

In view of the long duration of the affliction and the comparative state of nutrition of the patient, the slight secondary emphysema, the tardy involvement of the lymph nodes, we were inclined rather to exclude the more malignant form of sarcoma and to consider a slow growing carcinoma or endothelioma of the lung as the most probable form of neoplasm in this case.

The patient and his friends were advised of the unfavorable prognosis, and he was especially warned of a sudden hemorrhage at any time endangering his life.

The patient remained under observation for two months, during which time the disease progressed with great rapidity.

Enlarged lymph nodes appeared first in the right axilla and then in the left, while the cervicæ and supraclavicular regions remained free. An area of dullness, with harsh and prolonged respiration and diminished vocal fremitus, appeared about the middle of the right lung posteriorly, together with considerable pleuritic friction. Very soon thereafter with increasing dyspnea and distressing pain and cough, fluid appeared in the right pleural cavity, which rapidly filled.

The chest was aspirated and 20 ounces of clear fluid (serous) was removed. Almost immediately the pleural sac began to fill up again, but before the patient was ready for another aspiration he was taken in a carriage to a meeting of the medical society, at which he was to be demonstrated by Dr I. Adler. On the way he was seized with a profuse hemorrhage which ended his life.

An autopsy was performed January 23, 1904, by Dr Otto Schulze. From a microscopic examination a tumor mass was found involving the lower end of the trachea on the right side, four rings above the bifurcation, and on the left side just at the bifurcation. This tumor continued and involved the right bronchus, reaching as high as 2 cm. above origin of the innominate artery. Glands over the anterior portion on the right side of the dome of the pericardial sac were involved in the growth, and the upper lobe of the right lung was adherent to the sac. The growth extended directly through the anterior portion of the lobe of the right lung, following the larger branches of the bronchi to the costal pleura. The rest of the lobe toward the apex was atelectatic and the bronchi filled with pus. The middle lobe of the right lung was the seat of hepatization very light in color and slightly granular. Wherever the growth pierced the wall of the bronchus to the mucous membrane the membrane presented an ulcerated and eroded appearance. The lower lobe was atelectatic. The diaphragm contained a number of villi markedly injected. The left lung contained a few grayish white plaques (metastases) 0.5 cm. in diameter, on the posterior surface of the lower lobe, on the posterior margin of the base and also on the surface of the base. Embraced in the mass and constricted by it was the superior vena cava, showing a distinctly puckered arrangement as viewed from the right auricle. The right pulmonary artery showed longitudinal folds with a funnel-shaped narrowing down to the tumor, where the vessel is almost entirely compressed. The heart showed some brown atrophy, but was otherwise normal. The peritoneum was perfectly free. The spleen was small and congested. The liver was normal in

size (surface smooth) and pale in color. The stomach and intestines were anemic but otherwise normal. The patient had but one kidney, horseshoe in shape, and ureters passing anteriorly.

The third or pleuritic type in my experience is more rapid in its course than the other two. It is extremely acute, and one is markedly impressed by its behavior. Suspicion of these cases is not aroused until recourse is had to several tapplings. Aspiration never relieves and the fluid, which is at first serous, rapidly changes in character and becomes hemorrhagic. If the patient lives long enough it finally becomes chocolate color. Even after the tapping there is no abatement of the cough, dyspnea, expectoration, and general distress. The dislocated heart never returns to its normal condition. Exemplifying this type is the following case.

Case III.—Woman, aged forty-two years, was seen in consultation with Dr. Morgan. She was the mother of five children and had had typhoid twenty-five years before. Her personal and family history were absolutely negative. The patient stated that eight weeks previous, while at dinner, an amusing conversation had caused her to laugh excessively and started a cough, which remained unabated for three days, and which was not relieved even by opiates. According to her own knowledge this was the first evidence of cough she had experienced up to that time. Besides her cough, she now complained of weakness and dyspnea.

On physical examination the left chest proved absolutely normal, but at the right base posteriorly there was moderate dullness. Breathing sounds were distant and a few rales were audible. She continued in an unchanged condition, with a slight, even temperature for ten days. Her dyspnea then became intense and physical examination by Dr. Morgan, revealed signs of pleural effusion in the right chest. There was cardiac displacement toward the left. The patient was transferred to St. Elizabeth's Hospital, where the dyspnea became exaggerated. Aspiration of the right chest showed bloody fluid. The heart did not return to its normal condition. Signs of pleural effusion returned in the next few days, after the tapping, and during the remainder of her life which lasted three weeks after her admission to the hospital. Several aspirations were performed. No tubercle bacilli or tumor cells were ever in the pleural fluid. The white blood cells count was 15,000. Her temperature during the interval in the hospital varied from 98 to 102. Autopsy revealed an endothelioma of the base of the right lung with involvement of the right pleura.

In differentiating pulmonary cancer from other conditions, the anatomical distribution must

necessarily be taken into account. If the disease attacks the lower lobe it can easily be taken for a simple pleurisy, especially in the early stages of the disease. Exploratory puncture in early carcinomas may be negative. But if pleural effusion is present the fluid returns after tapping, and soon changes its character from serous to bloody or even a chocolate color. Percussion immediately after aspiration will show in tumor cases a persistence of dullness. Again, as stated before, the heart even after tapping remains displaced in these conditions.

If the tumor occurs in the upper region tuberculosis must be excluded. It is well to suspect cancer in an elderly patient with cough and blood expectoration if the tubercle bacilli are persistent, absent and the tuberculin tests are constantly negative. Dilatation of the veins and peculiar changing zones of dullness always point strongly to a tumor. In cancer you will again find that the dyspnea and subclavicular pains are distinctly more intense. Again in tuberculosis we have never seen a case wherein a great amount of tissue was involved on one side in which the other side was not affected to a more or less degree. In contradistinction to this, in primary cancer the other side is comparatively healthy, so that at least the physical signs of infiltration are certainly doubtful or absent. Again, if supraclavicular glands are present, excision should be resorted to and a specimen of the tissue submitted to the microscope.

With regard to aneurysm the roentgen-rays which are of great service in the diagnosis of cancer, may be of little use in differentiating these two conditions. There are a few instances wherein the tumor lies upon the aorta and gives it an expansile character. It is not uncommon to have a difference in the two pulses in pulmonary cancer because of the subclavian pressure, which naturally adds to the difficulty of differentiation. Lung tumor though, according to A. Frankel, produces a double recurrent paralysis in contradistinction of the left recurrent paralysis which is usually associated with aneurysm. In cancer there is at times a distinct asymmetry of the thorax due to reaction of that side of the chest where the tumor is localized. The tumor as it grows, frequently involves the pleura prohibiting a proper expansion of the lungs. Absence of dullness over the lung and absence of any changes in the sputa would speak more for aneurysm or any exclusive mediastinal tumor than it would for a pulmonary cancer. A positive Wassermann reaction would point to aneurysm rather than to cancer. But it is well to remember that cancer and syphilis of the aorta or any part of the body may co-exist. The writer has known of such cases of cancer complicated by leucic aortitis. Echinococcus cyst of the lung may be differentiated from cancer by

the complement-fixation test Roentgenography in differentiating these two conditions is of considerable value. Other pulmonary conditions which must be thought of include, infarct, syphilis, dermoid cyst actinomycosis, chronic abscess and gangrene of the lung.

The roentgen-rays have considerably furthered the diagnosis of tumors of the lung. They are of considerable value in determining the origin and mode of extension. The commonest form seen by Roentgenographers occurs in the upper lobe, where they produce an intense uniform shadow. This shadow does not quite reach the apex, and it may be difficult to distinguish it from the other forms of infiltration. Other infiltrating growths may extend from either hilus into the lung field often merging with the diaphragm. Here fluoroscopic examinations in various positions will often differentiate these shadows from pleural effusions and tuberculous nodes by the density and sharp contours. The bronchoscope has also been used as an aid to diagnosis, but its use at the present time is limited to bronchial cancer. What the future has in store for this means of differentiating is a question. The treatment must necessarily if radical be surgical.

During the last few years intrathoracic surgery with its improved methods of anesthesia has been materially widened, and we feel that the patient suffering from this dreadful malady should at least be given the opportunity of relief by operation.

### Discussion

DR JOHN A. LICHT, Pittsburgh. This certainly is a very interesting paper and Dr. Pickard brought out a number of diagnostic points which were new to me and therefore all the more interesting.

While Dr. Pickard was talking I had in recollection four cases of malignant growth of the lung and in all cases we found fluid varying from a straw color to a bloody fluid. One was at the base of the right lung. This patient who was the brother of a well-known physician in the eastern part of the country came to me for examination. In this case we had a great deal of difficulty in differentiating between pathology in the lung and pathology in the liver.

The second case was a very interesting one in which we had dullness at the left apex, and it took us quite a while to justify ourselves that we were not dealing with a case of pulmonary tuberculosis. The diagnosis of a malignant growth of the lung was confirmed at autopsy. There is just one other case to which I should like to refer not a case of carcinoma but of sarcoma of the left lung which is probably an

exception to one point which the reader has brought out, and that is that the tissue is never expectorated. In this case the patient expectorated a small amount of tissue which was found by Dr. Klotz, of the University of Pittsburgh, to be a giant celled sarcoma. The patient who had gone around to various clinics, including Hopkins where the diagnosis was confirmed, has had radium treatment, and is better.

DR EDWARD TOFREY, Olean. I merely want to emphasize the point of the difficulty of diagnosis in the early stages of these cases, and if you will go back to the JOURNAL of the State Medical Society, April 1916, you will find reported there a case by Dr. Kunkel (Bon Air Sanatorium) and myself, where we treated a patient for a year or so for tuberculosis, in a sanatorium and outside, and finally came to the conclusion that the condition was malignant. She finally died, and the autopsy showed sarcoma. We did get a chocolate colored fluid from the chest.

Another case was referred by a very good doctor to Rocky Crest Sanatorium as tuberculosis, and proved to be malignant disease. Of course, it had to be discharged but I appreciate the fact that the difficulty of diagnosis in the earliest part of the disease is particularly difficult.

DR BENJAMIN S. BARRINGTON, New York City. I would like to say one word about the treatment of this condition. If I understood Dr. Pickard correctly, he expressed the idea that surgery might be effective sometimes. It seems to me that this is a condition in which surgery must of necessity be peculiarly ineffective and if we can make the diagnosis as apparently we can in a majority of cases some other form of treatment, such as X-ray or radium, might offer more than surgery. Naturally the danger in treating these cases without first obtaining a specimen for pathological examination is that if such a case be cured the question would immediately be raised whether we were dealing with a malignant or benign growth.

DR NATHAN W. SOBLE, Rochester. First I would like to say that Dr. Pickard's resume of the diagnosis of malignant diseases of the mediastinum certainly is very complete and deserves much credit. I would like to ask Dr. Pickard for a little more information about the last case, which appears to me to be quite unique. It is certainly due to the advance made in the use of the X-ray in the diagnosis of chest cases and has afforded us much aid in being able to establish our diagnoses early. In the second type of mediastinal tumors, it is sometimes very

difficult to make a positive diagnosis in the early stages. Surprising as it may seem, I think all clinicians will admit that occasionally we will get a shadow of a tumor in the mediastinum which will cause extreme pain with apparent pulsation and would lead one to strongly suspect that we were dealing with a dilatation of the aorta, and that subsequent events will prove that the growth is solid and the pulsation simply transmitted. Pain is one of the most marked symptoms. One case comes to my memory, whom I saw about a year ago, and who had been ill for the year preceeding, and a diagnosis of neuritis had been made. He had been treated at some of our best sanatoriums, and when he finally died it was found at the autopsy that he had had a malignant disease of the mediastinal glands. One point more that Dr Packard brought out which is extremely important, and that is, the heart not returning to its normal position after the fluid has been withdrawn by aspiration, particularly in cases where we have had pericarditis with adhesions.

DR JOSEPH R. WISEMAN, Syracuse. During my last student year at the medical college, I remember being assigned to a case in the tuberculosis ward, that had apparently been sent into the hospital to die. I found a great multiplicity of physical signs in the chest that rather confused me. I also noted that the patient had on his little finger a peculiar ring-shaped, rather firm tumor raised above the surface level of the finger about a quarter of an inch, but I looked upon that merely as a coincidence, and didn't see the connection, although it should have been obvious. The patient died a few days later, and the autopsy showed a mediastinal sarcoma, involving both lungs, secondary to the growth on the finger which also proved to be a sarcoma.

DR MAURICE PACKARD, New York City. This discussion has brought out, among other things, the frequency of primary cancers of the lung. This is in direct contrast to the report of Dr Mackenzie, of Bellevue, who stated, before the clinical society of that hospital, that after going over the autopsy records of this institution, that he was unable to find a single authentic case of primary cancer of the lung. This comment appeared to me rather far-fetched. Of course, they don't autopsy but a small percentage of the cases. If they would autopsy only a fair percentage of the cases diagnosed as chronic tuberculosis, I am quite sure that Dr Mackenzie, would be rather surprised as to the frequency of primary cancer that would be found.

Another point, which was not overemphasized in my paper, was the peculiar coincidence of the

occurrence of these cancers in the right lung. This is indeed a condition worthy of more study.

In answer to the question about sarcoma of the lung, our experience was limited to only one case and this case was not verified by autopsy. We made the tentative diagnosis by clinical signs and findings, X-ray and history of the case. We lost control of this individual and the record is not complete. We have not placed or considered an authentic case, unless backed up by a complete autopsy.

The case of pulmonary infarct was an interesting one and I only showed it as a matter of differentiation. This man was in the hospital and was operated on by Dr Chetwood for an epithelioma of the penis, with complete success. A few days after the operation he complained of pain in the chest, dyspnea and slight prostration. His temperature was about 100, pulse 72 and there were a few rales in the right side of the chest in the neighborhood of the third rib. His chief complaint was the intense pain. His temperature dropped to normal within a few hours, and the question as to the diagnosis came up. X-ray examinations demonstrated those wedge shaped affairs starting from the hilus and spreading to the periphery. Four slides taken one week after another show the progress of the absorption of this infarct and conclusively prove it was not carcinoma. As to a pneumonia, the shadow demonstrates as well as an autopsy, the configuration of the infarct. Of course, a great many cases of so-called ether pneumonias, are nothing more than pulmonary emboli. When you think of the open veins, which are left after operation, the wonder to my mind is that we don't have more infarcts. At that we have a great many more than we think. The chills and sudden collapses after operation or child delivery, may be a small embolus and not a nervous shock, to which we often ascribe this syndrome.

As to treatment of cancer of the lung, I believe there is a great future for surgery. Radium and X-ray may be of some help, but I am not as optimistic as some others.

John Hopkins has sent out some encouraging reports but in my experience, it depends entirely upon the viewpoint of the administrator of these agents. If you are enthusiastic and positive, you will be surprised as to the subjective improvement of these patients. I suppose that is worth a great deal, so when you want to send your case to an X-ray therapist, be sure and select the one with the most enthusiasm and optimism.

As to the differentiation between primary and secondary cancers, the history of the case is most important. Autopsy, however, will clear up a great many points.

## SOME IRREGULARITIES OF THE HEART AND THEIR TREATMENT\*

By JOHN L. HEFFRON, A. M. M. D., Sc. D.,

SYRACUSE, N. Y.

**S**IR JAMES MACKENZIE the eminent physician, now of London and in Chicago in June 'The invention of the stethoscope has delayed accurate knowledge of the disorders of the heart for decades! He himself is the inventor of the Ink Polygraph and one who uses with consummate skill all of the diagnostic instruments of precision. So this statement is not the epigram of a prejudiced man but an expression of the deliberate opinion of one of the keenest medical men this generation has produced. It is he who called loudest to us to consider first the condition of the heart muscle. It is, largely too to his careful and accurately recorded observations in a general practice in a small manufacturing city that we owe the clarification of the various irregularities in the action of the heart which have been casually observed and imperfectly understood until a very recent day, and which even now in some of their variations, lack satisfactory physiological and pathological explanation. It would be presumptuous for one with less opportunity for extended observation to enter upon this field unless he had had occasion to give close attention to some form of irregularity. This is my situation and I need not apologize for making use of a personal experience as well as of notes upon the care of others.

The rhythm of a normal heart is usually constant, even and as exactly timed as the beating of a metronome. Rhythmical contraction is an inherent quality of the heart muscle and each contraction is the maximum effort of which the heart is capable. The impulse to contraction in normal hearts emanates from the sino-auricular node in the right auricle at the mouth of the superior vena cava and extends rapidly thence throughout both auricles. At the close of auricular systole this impulse is conducted to the ventricles by the auriculo-ventricular node and its two branches, one to the right and one to the left ventricle. These conduction bands terminate in the papillary muscles and in the walls of the ventricles. But an unusual impulse to con-

traction may arise in any part of the muscular structure of either auricle or ventricle. If the conducting bundles are impaired an independent impulse may govern the contractions of the muscle at the usual rate, while at the same time the ventricles beat at a much slower rate in response to another impulse arising within their own walls.

The rate of the heart is controlled by the branches of the vagus nerve and is usually seventy-two per minute when at rest. If the vagus be not in equilibrium the rate varies. In response to work the rate of the heart increases *pari passu* with the severity of the work, and gradually returns to its normal rate when effort is relaxed. A normal heart returns to its normal rate, after effort in about three minutes.

Of the various forms of irregularity now differentiated I shall confine this discussion to premature contractions or extra systoles, paroxysmal tachycardia and auricular fibrillation.

*Premature ventricular contractions*, or extra systoles, are very common. In this form of irregularity there is a response of the ventricle to an impulse to contraction emanating from a focus in the ventricle previous to the anticipated time. This impulse follows the ordinary impulse conducted from the auricle at a rapid rate, thus making the contraction premature, and there is usually no tendency to its repetition, so that, instead of the ordinary even rhythm of the heart there is, after the usual systole, an extra systole then a long pause, and the following systole falls in time, but with increased strength. The time limit for the extra systole and the pause is exactly equal to two complete cycles of the normally beating heart.

*In premature auricular contractions* the mechanism differs only in two particulars: first, the impulse to contraction is formed in the auricle and is conveyed prematurely to the ventricle and, secondly, the time of the extra systole and the following pause is somewhat less than the two complete cycles of the heart's rhythmic action.

Premature ventricular contractions are at least three times more common than premature auricular contractions and they are very common in the later periods of life. Their differentiation is not difficult if one time the regular rate of the heart and observe if the systole after the pause is just on time or anticipates that time. The symptoms depend upon the strength of the extra systole and upon the frequency of their recurrence. The subject of extra systoles always has the attention called to his heart and that, in itself is disturbing, and the more so the more highly organized nervously he is. It is the pause, the heart stopping and the heavier thrust at the next systole of the heart against the chest wall that

\*Read at the Annual Meeting of the Fifth District Branch of the Medical Society of the State of New York at Utica, October 3, 1918, and at the Meeting of the Syracuse Academy of Medicine, November 19, 1918.

awakens attention and at first apprehension. No one can feel it for the first time without wondering what it means, and, unfortunately, any symptom of heart disease is considered still by the laity as practically equal to a death warrant. The symptoms of faintness and a cold sweat and an anxious face are the result purely of a vivid imagination. As an incentive to consult a physician they are of value, for often enough they are found to accompany objective symptoms by which an accurate diagnosis of the condition of the heart may be established. They occur frequently in myocardial degeneration, often in valvular lesions, and often are the only signs of a disturbance of the nutrition of the heart. They are to be differentiated from heart-block. In heart-block there is a dropped beat. There is neither movement nor sound at the apex during the dropped beat. Both the motion and the sound of a premature contraction can be detected at the apex, though both may be slight.

Premature contractions are often the forerunners of other more serious disturbances of rhythm. I have never known the advent of paroxysmal tachycardia or of fibrillation of the auricle in a person from whom one could not obtain an accurate history of premature contractions. In my own personal experience and in some cases observed, I have recorded, first, many periods of simple tachycardia, later the advent of premature contractions, followed in later years by paroxysmal tachycardia, paroxysmal auricular fibrillation and, finally, permanent auricular fibrillation. I do not mean by any means to suggest that this is a necessary or indeed, a common sequence of cardiac irregularities, for undoubtedly in many cases premature contractions are detected in patients in whom little else wrong about the heart can be found.

It is fashionable to ignore this irregularity, it is right to minimize their importance *per se*, but it is folly not to be intelligent about them and to assure oneself of the exact condition of the heart which presents them. At this period, when much is being said about the essential integrity of a heart showing this or that unusual phenomenon, it is not out of place to say that it is only those of skill in diagnosis, of well-balanced judgment and of large experience who should assume the final responsibility of judging the functional capacity of the heart.

Premature contractions of themselves call for no treatment. If they be the only signs of disturbed nutrition of the heart, it is best to ignore them. One can be taught easily to allay his fears of them, if nothing more than the unusual thump in his chest is felt occasionally. They do not, of themselves, demand advice to lighten work or to change in any way one's usual life. If, however, by the accident of

premature contractions the patient consults his physician and it is demonstrated that premature contractions are but incidents in a serious disorder of the heart, it is that which demands the right advice.

*Simple tachycardia*, or palpitation of the heart, is a gradual quickening of the heart's action which, after a certain time, gradually merges into its former rate. This is seen in response to fear, the neurotic conditions, in fibrile states, toxæmia, etc. The rate of simple tachycardia rarely exceeds 130.

*Paroxysmal tachycardia* is a sudden jumping of the heart action into a rate of from 160 to 200, to be followed after a longer or shorter interval by just as sudden a return to normal rate. Both before and after the paroxysm there are a few heavy pulsations due to premature contractions. Such a paroxysm of tachycardia may last from a very few seconds to minutes, hours, days or even weeks. During the paroxysm the rate is maintained throughout at the same pace and is not affected by exercise or rest. In one instance I felt the onset of an attack at 10 A. M. At 1 P. M. an electrocardiogram of the heart's action confirmed the nature of the attack and established the rate at 193 per minute. At 8 P. M., beginning to be somewhat distressed, I phoned a physician. While using the phone a heavy beat of premature contraction was felt, and after one or two more such beats the heart resumed its usual regular rate of 76 and soon all distress had vanished. Short paroxysms are rather common. The longest paroxysm I have observed was in the case of a man with chronic Bright's disease who had several paroxysms of a week's duration and one of three weeks' duration, during which the rate was constantly 180. I have observed cases with a pulse of 200 which was maintained for varying periods, and occasionally some as slow as 150. Paroxysmal tachycardia is usually ventricular in origin and the impulse emanates from an eccentric focus over which the vagus has no control. It has been observed in hearts that were known to be diseased, but it has been noted also in hearts in which this was the first manifestation of disorder. When the paroxysm is short this irregularity produces simply consciousness of the heart's action. The heavy thud of a premature contraction is followed by a fluttering sensation in the chest which causes a sinking sensation in most people, and until one becomes accustomed to its manifestations there is more or less apprehension. There is soon added to the disagreeable sensation of flutter in the chest a sensation of weight in the upper chest and more or less dyspnoea. If it persists, cyanosis, belching of gas from the stomach, enlargement of the liver, and finally, in prolonged cases, general oedema is added, due to

the gradual failure of the circulation produced by the shortening of the period of diastole

Paroxysmal tachycardia must be differentiated from simple palpitation and from paroxysmal auricular fibrillation. From the former the rate of the pulse alone is usually sufficient. Simple tachycardia seldom raises the pulse above 130, though I saw a neurotic diabetic with a pulse of 152 very recently. In paroxysmal tachycardia the rate is usually above 150. In simple tachycardia the rate is influenced by exercise and excitement which increase it, and by rest and quietude of mind which diminish it. This is not true of paroxysmal tachycardia for the rate at first established is maintained. In simple tachycardia the acceleration of the pulse comes on gradually and diminishes gradually. In paroxysmal tachycardia the rapid rate is established suddenly at its maximum and ceases just as suddenly. Paroxysmal tachycardia is distinguished from paroxysmal auricular fibrillation by the regularity in time and in force of the pulse in tachycardia while in fibrillation the beats are never of the same length or of the same force, though the total pulse may number as many beats in a minute. In paroxysmal tachycardia the heart is seldom if ever enlarged during an attack. In fibrillation the reverse is true particularly if the paroxysm be at all prolonged. A physician seldom sees the patient in a minor attack and must depend upon the history given when consulted. The distinguishing feature of sudden onset and an equally sudden cessation of the attack and the history of the character of the beat whether regular or not during the paroxysm are alone to be depended upon. The detection of evidence of cardiac impurment in the interval is of no differential value except in cases of mitral stenosis. In mitral stenosis sooner or later, fibrillation is expected to develop, and not infrequently the subject of mitral stenosis has one or more attacks of paroxysmal fibrillation before that irregularity is permanently established. If a patient is known to have a definite cardiac lesion and later develops paroxysmal attacks of either tachycardia or fibrillation there is usually a change or a suppression of the murmurs a subject the complexities of which cannot be discussed in a short paper.

The prognosis of paroxysmal tachycardia depends entirely upon conditions other than the paroxysm. It is customary to think that all such attacks shall ultimately end and that the patient shall be no worse for it. That is the rule but a paroxysm of tachycardia has been an accompanying symptom of the final act both in diseased conditions of the heart and in cardiovascular sclerosis due to nephritis.

There is no curative treatment for the paroxysm. An appalling list of remedies and remedial measures have been reported and the last thing

given or done just before the paroxysm has ceased usually gets the credit for cure with the patient and his friends. But, unfortunately in a second attack the same remedy does not always work. For years I could stop an attack by holding the breath, but there came a time when the attack went beyond the period of possible apnoea. The old physician quoted by Dr H C Wood always aborted an attack by a swallow of black coffee or of ice water. In later periods I found most certain relief by a position which threw the heart forward against the chest wall and I have seen that position "on all fours" effective in several cases. If the attack is prolonged over a period of hours or days it is more easily borne if a bromide or a small dose of morphine is administered. If fatigue has incited it, as has been most frequently the case in adults small doses of nuxvomica, after the manner indicated by Lauder Brunton to induce sleep in fatigue by giving one drop of the tincture every hour for a few doses or just enough to raise the cerebrospinal centers to a condition just under normal resistance is indicated but larger doses are apt to increase the sense of distress. Reassurance, quiet, a stomach at rest and an empty colon and time are the essentials. Sometimes other things serve to help. Most persons who have one paroxysm of tachycardia have more and the frequency of recurring attacks depends almost wholly upon the relation of rest to work. In recurring attacks the education of the patient to the appreciation of the fact that he must live well within his daily reserve power is essential. Where this has been done I have known people to remain entirely free from them.

In auricular fibrillation there is a total irregularity of the cardiac rhythm. It is the action in what we used to call "delirium cordis." The mechanism of auricular fibrillation was determined by animal experimentation and by the aid of the electrocardiogram. If the action of a heart is observed in an animal prepared for demonstration, the auricular systole is easily seen as a quick movement just preceding the contraction of the ventricles. It is a beautiful illustration of the orderly working of the heart. When auricular fibrillation is produced the auricle is held apparently quiet in diastole. There is no systole nor attempt at systole on the part of the auricle. If now the musculature of the auricle is examined minutely or be gently palpitated it is observed that, though the auricle as a whole is held constantly in diastole, the entire organ is alive with rapid lawless tremulous and twitching motions. Thus robt the ventricle of its regular impulses to contract and substitutes a delirium of impulses arising everywhere in the auricle which descend to the ventricle in total disorder. If the conducting paths are intact, many impulses may come through as in parox-

ysmal tachycardia, and the ventricles respond to the crazy impulses in the crazy way to which they are stimulated and beat very rapidly but with total irregularity. If the paths of conduction are interfered with the total number of beats are fewer than 200 and may be as few as 50, but not two beats are alike in force or in recurrent time. This makes a tumultuously beating organ which flutters and thumps in the chest in an indescribable way. This action on the part of the ventricles in diseased conditions has been observed from earliest times. By the aid of the electrocardiogram it has been proven that in *delirium cordis* in man the action of the heart is identical to auricular fibrillation produced in dogs by experimentation.

The origin of the impulse is eccentric and similar to, if not identical with, the origin of the impulse in premature auricular contractions, but the number of such pathologic impulses is so much greater as to confuse and render inoperative the contraction of the auricle as a whole.

This is by far the most commonly observed cardiac irregularity. It attends as a rule all cases of mitral stenosis. It expresses very many cases of myocardial degeneration from whatever cause, and it accompanies a goodly number of other pathological conditions of the heart. In itself it is proof positive of a damaged heart. At its onset, usually after overexertion or fatigue, the rate is as a rule rapid. The radial pulse is not an accurate measure of the number of contractions of the ventricle. One must listen keenly at the apex and count the contractions there to estimate the strain under which the heart is working. Many feeble contractions fail to reach the wrist. With a trained ear and a well adjusted stethoscope there is no excuse for failing to know just what the ventricles are doing. The use of any instrument for measuring blood pressure gives a visible demonstration of the variations of the pulse. By comparing the number of beats heard at the apex with those felt at the wrist or seen in the sphygmomanometer an accurate computation may be made of the number of contractions of the heart too feeble to send the blood through the body.

Auricular fibrillation may be paroxysmal and cease completely after a certain time. If so, it begins and stops suddenly as does paroxysmal tachycardia. The rule, however, is that once established it persists to the end. In 1916, after a rocky summer, I had my first attack of paroxysmal fibrillation at midnight September 19 after an evening fatiguing to body, and otherwise disturbing. Thinking it was but a recurrence of tachycardia I took fifteen grains of bromide of soda, got into my favorite left decubitus and watched the performance while waiting for sleep. There was the same sense of weight in the upper

chest, the same impulse to breathe deeply, but, with the fluttering in the chest, there was a disorderly romping and thumping and trembling to which I had not hitherto been accustomed. The radial pulse was 150 and totally irregular. I remained in bed until five o'clock the next afternoon. Having guests for dinner, and deciding that I could be no more uncomfortable anywhere else, I arose. While shaving I was conscious of a particularly heavy thud, then a pause and another thud, and the usual rate of about 76 was established. I failed to convince my associate that I had fibrillation. The ink polygraph the next day showed a perfectly normal tracing with occasional premature contractions, as was then usual. On the night of October 23 I attended grand opera, pretty tired to begin with and utterly fagged at the end by the tedium of a badly managed and long drawn out performance. The second paroxysm of fibrillation began while I was preparing for bed. This time it continued somewhat less than twenty-four hours. My heart action remained usually regular after that until the night of November 24, when another paroxysm began in the evening, and I began to take digitalis at once on my own responsibility. My physician visited me in the morning and confirmed my diagnosis, which the electrocardiogram attested the next day or so. This attack established the fibrillation permanently.

The symptoms of auricular fibrillation itself are not in the beginning so different from those of tachycardia or of a long series of premature contractions. But where it is added to other symptoms of heart failure all such symptoms are very greatly augmented. It is not necessary to review them.

Auricular fibrillation always lowers both systolic and diastolic blood pressure. It adds to the difficulties of circulation in an impaired heart and augments beginning dilatation. Exercise always exaggerates the irregularity and increases the rate of the pulse. In an irregular sequence of premature contractions the irregularities as a rule are diminished in number and when the pulse is pushed up by exercise to 100 and over the rule is that they no longer occur but this rule has exceptions. A girl of sixteen who had never had any diseases but measles and chicken pox was seen in December, 1917, in whom chlorosis and premature contractions in an otherwise sound body were discovered. Rest in bed, digitalis and iron restored her equilibrium so that she was permitted to return to school. This summer she spent her vacation in too vigorous exercise. Her hemoglobin September 23, 1918, was 85 per cent, but her heart was enlarged and the premature contractions were again present. During rest these were infrequent after hopping on one foot one hundred times there were

three and four premature contractions each minute. The diagnosis and the increase in recurrence of the irregularities after exercise were both confirmed by the electrocardiogram on September 28, 1918.

I wish to call attention to two personal observations. My heart strength is now probably 75 per cent of what it should be at my age. When in good condition, if I walk a mile and start off briskly, at the beginning of about the fourth quarter my feet begin to feel heavy, my gait automatically slows down, I breathe a little heavier, and at the end of the mile feet and legs below the knees feel leaden and are moved by conscious effort, but are not oedematous or symptomatic or painful. Nature's brake, I take it!

When the fibrillation was first established and in a few instances since regaining cardiac strength when that strength was temporarily overtaken, the result of exercise has been felt in the upper chest as a sensation of not having sufficient room for my machinery. I feel the heavy beats near the clavicles and there is a suggestion of suffocation but there is no heaviness of the extremities.

I have never seen a report of this irregularity in which a patient claimed to have felt the fine fibrillary, tremulous action of the auricles. I believe I do feel it at times when lying quietly on either side with mind alert. Under the influence of ten minims of the tincture of digitalis daily my pulse as a rule is under 80 and every beat comes through. It is irregular and the beats vary somewhat in strength of impulse. This is not noticed when up and about except with the effort of attention. When lying on one side I am conscious of every movement of the heart, and after the activities of the day it takes about half an hour to become sufficiently accustomed to this sensation to drop off to sleep. When the heart is the most quiet and my mind is alert as after a good night's sleep I can feel in the cardiac region in addition to the beats, a gentle continuous irregular tremor. This is quite distinct from those systoles of the ventricle not strong enough to make a radial pulse which are present when the heart has been subjected to temporary overstrain. At such times I have counted by sensation 150 contractions of the ventricle a minute while the pulse registered many beats less.

Dr Alsever of Syracuse, Dr Thayer of Baltimore, and Dr Pratt of Boston, have not thought there was any regurgitation at any valve except early, when the heart was dilated, Dr Thayer thought he detected a murmur at the tricuspid valve which he did not find at examinations after the size of the heart had diminished.

I am well aware that a physician's interpreta-

tions of his own symptoms are proverbially unworthy of credence. In acute conditions a doctor can not see anything in himself accurately. But after a chronic, relatively stationary disorder is established, and the mind of the subject is freed from fear and of the prognostic importance of symptoms observed, and is fixed upon the accurate, scientific observations of the manifestations of an established lesion, may not even a physician report facts about himself that might prove of interest and trustworthy? I am sure of these sensations. I believe them to be caused by the fibrillation of the auricles, but perhaps it would not be wise to include this amongst the subjective symptoms of this disorder.

While a grave disorder, the prognosis of auricular fibrillation depends largely upon the condition of the heart muscle. It is a symptom which ordinarily is not added to other evidence of myocardial incompetence until rather late, and yet I have a man under my observation in whom this diagnosis was surely made in 1903 and I can not see that to day he is markedly worse than at that time. He has conserved his heart strength. It is a common accompaniment of senile degenerations so evidence of death at or after the traditional limit of three score years and ten but not long after the establishment of fibrillation should not be considered a prognostic estimate. Nor should fibrillation be considered the cause of death in cases of mitral stenosis. Those cases die early anyway, whether fibrillation develop or not. I am becoming less inclined to accept ten years or any period as the necessary limit of life after the establishment of fibrillation and because of such incidence. It depends on the heart muscle and on the re-establishment of an equilibrium of the nerve centers. It has been calculated that the normal heart is capable of doing six times the amount of work which the average active man requires of his heart in the routine of daily life. This is probably not an overstatement. It is this reserve power of the heart upon which one can depend in planning the restoration of a damaged heart to such a degree of usefulness as shall make possible a considerable degree of activity. But the re-establishment of nerve poise is a factor of equal if not greater importance. It requires time to recover from every serious illness. After typhoid fever it is expected to take months and even years before one regains his former fulness of power. So is it also with other serious illnesses. The active disease or the insidious degenerative process which precedes the establishment of auricular fibrillation, however sudden the onset of the fibrillation may have seemed, is of as great effect, and to it is added the depression produced by the consciousness that that organ which the patient has been taught to believe is the very citadel of life has been

attacked and damaged, and by that haunting fear of sudden death from which he has been taught fervently to pray "Good Lord deliver us." An estimate of the integrity of the musculature of the heart is easier than to judge accurately of the general recuperative powers of this individual, and it is upon such judgment, in the final analysis, that accurate prognosis depends. If a man regain his self control and will harmonize his activities with his cardiac strength, he can live as long as the heart will function, fibrillation or no fibrillation.

The treatment of fibrillation is peculiarly successful. It is in this disorder that digitalis won its spurs as a cardiac stimulant and it is in this class of cases in which it rarely disappoints if given with intelligence and with care. When the diagnosis is established the patient should be put to bed, and told exactly the nature of his disease. Diligent search for any focus of infection must be made and when found removed. The patient must be instructed in what he must do for himself. He must be taught the language of the heart, for it speaks in no uncertain tongue. He must be made to understand that dyspnoea, and a rapid pulse, and precordial discomfort, and unexplained fatigue of body or of mind and unexplained perspiration are the ways in which the heart says to him, "You are doing more than I can stand." He must establish a new estimate of his resistance and not compare, with distress of mind, his new limitations with his former abilities. He must be willing to deny himself many of the usual pleasures, and hours of work that keep him at the edge of his resistance or a little beyond. He must be reassured, and reassured again and again, until he attains his nerve equilibrium and accepts with joy the amount of work he can do with perfect comfort. Sir James' rule that "A man with a disorder of the heart may do with perfect safety what he can do with perfect comfort" is applicable to a subject of auricular fibrillation, provided he is honest with himself and defines with precision in every instance what "perfect comfort" really means for him, not for someone else. He must learn to select for nourishment the things that never distress him. He must be taught the proper and improper use of fluids, so that the volume of his blood may not be unnecessarily increased. Excesses of any kind should ever be indulged, but I have not yet convinced myself that one habituated to the intelligent use of a moderate amount of tobacco is better off without any nor that the man accustomed to the use of a little light wine with dinner must do more than be sure that he never takes much, and I do not think that the morning cup of coffee need be given up, though all of these are interdicted by writers on this subject. He must learn what rest is. It is complete re-

laxation, and it is "Nature's sweet restorer," whether the unconsciousness of ordinary sleep accompany it or not, day or night. In an average case a good general rule for a minimum of rest is two hours on a couch in a well ventilated room each afternoon and ten hours in bed each night. He must banish fear, suppress regret and look ahead with gladness. All these things can be taught him by his physician after he has been brought under the influence of digitalis.

The digitalis therapy should be carried out on the following well established principles: To begin with one must know his digitalis. Much of that in the market and particularly all of the unusual preparations so highly lauded are practically valueless. No one has shown this so well as Dr. Joseph H. Pratt in his article on Digitalis in the *Journal of the American Medical Association* for August 24, 1912. Some years ago I referred to one of our druggists an article on the fat-free tincture of digitalis. It was claimed then that it was less nauseating and that the extraction of the fat by deodorized benzine and its precipitation by ammonia in no way took from the efficacy of the drug. For nearly a year I used a U S P tincture prepared by Hynson & Westcot of Baltimore and established the dose needed for my "perfect comfort". When I began to take this fat-free tincture I found that I had to increase my dose. It didn't occur to me to suspect the drug. I suspected my heart was deteriorating and needed more stimulus. This fall I had the U S P tincture, and this fat-free tincture, both made from the assayed leaves purchased from the Gilpin Langton Company of Baltimore and both made by the same man, tested by Professor Dooley in the laboratory by the frog method. The U S P tincture was practically 100 per cent of the standard strength required by the U S Pharmacopoea, the fat-free tincture was less than 25 per cent of that standard strength. Physicians have said to me they never observed any effect from digitalis. Those who mean that have not had digitalis administered upon their order or they have given it in doses too small. Digitalis does produce in every person one at least of the following specific effect, a slowing and strengthening of the pulse, diuresis, nausea and vomiting or diarrhoea. To obtain an effect it should be begun in doses of fifteen minims every six hours and those doses should be continued until one of the effects mentioned is produced. Digitalis is absorbed slowly. When given by the mouth no effect should be looked for in less than thirty-six hours and it may be delayed for forty-eight hours. It often happens that the desired effect on the heart is not exhibited until nausea is produced. Preceding nausea there is in some an unusually sharp appetite. If this is observed the nausea may be

averted by cutting the doses down to two instead of four in the twenty-four hours. Unless nausea, which is central, or its precursor, is produced, these four doses should be continued until a digitalis effect is produced. Upon the recognition of this the dose must be reduced at once and but two doses of fifteen minims each of tincture of digitalis twelve hours apart should be administered daily and this should be continued until all the effects of impaired circulation have disappeared and until the pulse is reduced to a rate under eighty. When this result is obtained a single dose a day should be given. If twenty minims hold the pulse and relieve the symptoms perfectly well a further reduction should be tried. Proceeding in this way it can be established how much of the drug is necessary daily to produce "perfect comfort," and that dose may be used if it be necessary, throughout life and it will never need to be increased until the heart shows definite signs of further deterioration. Dr. Jacobi's address on the Continued Use of Drugs with Especial Reference to Digitalis is one of the best articles that has appeared on this subject.

In the larger number of cases however the continued use of digitalis is not necessary. Ordinarily the drug can be discontinued after it has done its work. It is perfectly safe to discontinue the drug to determine if it be necessary, but one thing must be remembered, viz., that the drug is eliminated much more slowly than it is absorbed and that you can not judge whether the patient can do without it in less than a week from the time he stops its use.

A good method for carrying out digitalis therapy is to stop the drug when the force and size of the heart is improved and put the patient on his own responsibility. If the pulse becomes rapid and more irregular inaugurate another period of rest and digitalis, and repeat such periods until he has learned to conserve his heart strength.

I saw September 29, 1918, a man in whom the symptoms of cardiac failure demanded digitalis medication fifteen years ago. He has been reasonably active in business all these years and has taken no digitalis after the initial period. His heart is so strong that after hopping on one foot fifty times his pulse was not accelerated more than twelve beats and this acceleration subsided within three minutes.

There are some other things to say about digitalis administration. The dose of the tincture, the only preparation I use, is fifteen minims, not drops. There are about thirty small drops in fifteen minims and a few less if dropped from the lip of a vial. I counted twenty-three

drops in fifteen minims so delivered. A minim pipette or a graduate should always be used.

When obliged to use a preparation you do not know by assay on animals, the only accurate rule for dosage is to push it up until you get a digitalis effect, meantime seeking for a good preparation. For example, I obtained from the 25 per cent fat-free tincture reported on above the digitalis effect I needed but I required a larger dose.

Digitalis in doses just too large produces irregularities of its own which may be detected in an otherwise irregular pulse. It produces coupled beats making the bigeminal pulse. It must be stopped at once when this is observed.

There is no advantage in any other preparation than the tincture except in case of travel or for convenience. In such cases Vitaville's Granules of crystallized digitaline gr. 1/240 can be used with assurance. Each granule produces the effect of fifteen minims of the tincture. They are a French preparation, but can be obtained.

The established amount needed daily is better given in one dose. Comparatively few who have regained cardiac power and who are honest with themselves and do live within their cardiac strength need more than ten minims daily and most of them need not more than five minims.

In an emergency the administration by the mouth or by hypodermic of digitalis or of any of its congeners is a waste of time. Reports have been made upon the intravenous administration of tincture of digitalis. I have had no experience with it. Amorphous strophanthine in a dose not greater than 1/250 gr. intravenously is efficacious and should be repeated as one repeats digitalis after six hours if indicated. The effect is immediate.

The dose of digitalis required to keep a heart under 80 and the circulation satisfactory is a measure of the degree of the degenerative changes which exist in the heart muscle. It follows, therefore, as a corollary that the prognosis in that patient who lives comfortably without digitalis is better than in one who can not do with digitalis.

The treatment other than by digitalis and the measures previously discussed is entirely symptomatic.

Managed in such a way as this, cardiopaths do not become neuropaths. They can and they should enjoy a full measure of the beauties of this attractive old earth and of the delights of friendship. These they can repay by doing a little better than which they are permitted to do.

## A NOTE ON THE ASSAY OF DIGITALIS PREPARATIONS.

By M. S. DOOLEY, M. D.  
SYRACUSE, N. Y.

**T**ODAY it is more clearly recognized that digitalis potency varies widely. The value of a digitalis preparation depends upon its having the definite effect which experience and experiments have shown to be beneficial in the diseased condition. Not to be certain of the activity of this drug creates anxiety for the physician and endangers the patient.

Much has been written about the standardization of digitalis since its introduction in England by William Withering in 1785, but apparently it is true today that the physician in any community is quite without a uniform guide in the selection of a preparation. One chooses a special proprietary (F 1) digipuratum, another a U S P tincture, another a fat-free tincture, guided in the choice by clinical reports, by experience and to an unwarranted degree by the persuasive advertising in his journals. That he is without accurate knowledge of the origin and methods of drying of the crude drug, the date of manufacture and the methods of storage of the preparations that he prescribes is almost certain, important as such information is.

Experiments and clinical experience are convincing on this point, affording abundant proof of extreme variation in the potency of digitalis leaves and derivative preparations. A few citations from the literature will suffice. This lack of uniformity is laid primarily to variations in the locality where grown. Hale reports variations from 100 to 400 per cent. Rowntree and Macht have found differences in strength of 300 per cent in American grown leaves. Contrary to the commonly accepted belief that cultivation robs the leaf of potency, they find that the cultivated leaf from Wisconsin possesses the highest value of any American leaf examined by them and it was adopted by the late Dr. Jane-way as the source of supply for the Johns Hopkins Hospital. Pratt is quite insistent in a recent statement that the locality of origin is all important. New England leaves he finds of no value but obtains a highly active supply from Washington and Oregon. However, annual variations occur in the same locality, for while the 1916 crop from Hobart, Washington, assayed above official requirements, the 1917 crop showed almost no value. He finds wild leaves coming from several other localities to be active at one time and not at another. The cultivated leaf from Minnesota showed high quality. In European countries like variability is recognized. Hatcher, on the other hand, denies that variations in potency can be ascribed to such a regional factor.

Very naturally equally wide variations would

result in tinctures made from various supplies or leaves unless each crop of leaves used is carefully assayed. Edmunds found 400 per cent variation in seventeen samples. Cushman experimented carefully with two tinctures and found one four times the strength of the other. Stewart assaying 51 tinctures showed variations ranging from 30 to 443 per cent. Symes in 1914 investigated British tinctures and found the better ones to vary from 200 to 300 per cent. He noted in some cases loss of potency after one month and at the end of a year some had lost more than 70 per cent of their activity. In common with a number of other observers he finds that the official tinctures for the most part do not begin to deteriorate until the 12th or 13th month if properly stored.

The duration and more especially the methods, of storage seem to exert an important rôle in the rate of deterioration of originally active leaves as also of the preparations derived from them. In spite of the fact that Edmunds found standard potency in leaves stored for eight years in cloth and paper bags it is certain that careless storage causes rapid deterioration as a rule. Storage of leaves and manufactured products should be in a dry, cool place away from the light. Dampness, especially, causes rapid disappearance of the active principles. Hence the personal factor of the pharmacist has to be reckoned with. Assuming a supply of digitalis tincture to possess official potency when obtained from the wholesaler or when prepared by the pharmacist himself, the physician has no knowledge of its age or how carelessly it has been stored and handled before reaching the patient. It will take time to correct such conditions. Meanwhile it is desirable to have some simple test of potency which the physician himself can apply which would tend to remove the uncertainty from treatment. Furthermore, if the results of such tests were brought to the attention of the pharmacist he would be stimulated to supply a better product.

Biological assay methods are quite numerous, but fortunately the best and official one is the simplest. It is the "one hour frog method" first suggested by Famulener and Lyons (1902). In principle it is as follows. A preparation is standard if a specified amount injected into the anterior lymph sac will bring the ventricle of the heart of a frog of a given weight to permanent systolic standstill at the end of exactly one hour. Samples being assayed are checked against a standard which is made necessary by seasonal variations in the susceptibility of frogs. The percentage strength of the test drug is then calculated quantitatively. In practice the method is considerably more difficult than this statement of it would indicate, for it must be well controlled as to details for accurate results. But used in a simplified form it would serve as an

efficient guide in choosing an active digitalis. Such assays may be made in the country, as no special equipment is necessary.

Preliminary assays of U S P and fat-free tinctures obtained from well known Syracuse pharmacists further show the need of making tests. In a few instances the pharmacist was found to prepare his own tinctures, but in nearly every case the supplies came from wholesalers and in all such instances little information as to dates of manufacture and other important details was obtainable. The assays showed some important results. One was that both the official and the fat-free averaged below standard strength. However, most of the U S P tinctures were of good quality, only two being notably poor (27 per cent). These two came from different druggists but from the same manufacturer. The other U S P samples ranged from 83 to 95 per cent. Of the fat-free samples only one assayed as high as 75 per cent. One was found as low as 20 per cent, the average being 44 per cent.

These results with fat-free tinctures are not unlike those recently reported by Roth from the Hygienic Laboratory. Assays of fat-free tinctures from a number of well known pharmaceutical manufacturers showed over 200 per cent variation in strength and only three out of thirteen assayed U S P strength. A second assay approximately five months later showed further marked deterioration in most of the samples.

Since there is a marked difference in the keeping qualities of the U S P and fat-free tinctures the question is raised as to whether the fat-free preparations have virtues superior to those of the regular tinctures sufficient to warrant their preference. Let us remember that the amount of fat is small in a dose of digitalis tincture. Hatcher experimented with the fat from digitalis leaves and could induce no irritation with it.

Further, he found that regardless of the method of administration, wherever U S P tincture induced nausea, vomiting, diarrhoea or any other untoward symptoms, like doses of fat-free tincture duplicated the effects. A point that calls for emphasis is that animals with stomachs removed developed these symptoms of nausea and vomiting as readily as those with intact stomachs whether U S P or fat-free tincture was injected. Hence the gastric symptoms are not locally produced but arise from an action on the vomiting center. The presence or absence of a trace of fat can obviously play no part in such an action.

The conclusions to be drawn from the brief assays are that preparations of digitalis for various reasons show great variation in potency, a condition which calls for routine assay, and that fat-free preparations seem to possess no superior qualities and deteriorate more rapidly than the U S P tinctures.

## OCULAR MALINGERING\*

By ELLICE M. ALGER, M.D.,

NEW YORK CITY

**V**ISUAL malingering has engaged the attention of foreign ophthalmologists for many years but has here attracted only perfunctory interest except among the few men doing medico-legal work. Recently, however, the remarkable growth of industrial and accident insurance, and still more recently the compulsory military service has made the subject one of vast importance to the ophthalmologist in his daily routine. In the industrial world there is no type of injury more disastrous to the individual than the partial loss of sight, nor is there any which is more easy to simulate, more difficult to detect, or more likely to appeal to the sympathy of jury or industrial board.

The subject is even more important from the standpoint of universal military service. In the army certain more or less arbitrary visual standards have been set up in time of peace which have been continued in time of war, and are undergoing a gradual process of modification as the necessities of the service are revealed. Just how large a percentage of otherwise healthy men fail to come up to these visual requirements we do not exactly know. The practice of many of the local draft boards has been to classify recruits according to the way they looked rather than that in which they saw and put the man to the trouble and expense of giving up business, disposing of family affairs, and going to some distant camp where they are weeded out at the first examination and returned to civil life. We do know that of the men rejected in camp over 30 per cent are refused because of defective vision. Just how many of them are malingerers it is impossible to say. Many of them have defects that ought to have been discovered at home while in many others defective vision is the grade by which undesirable material is eliminated from the service.

The one thing needed is a real examination in the beginning. We have all seen men so anxious to serve their country as privates or more often as officers that they try to memorize all the vision charts and resort to all sorts of tricks to get by. We have all heard of recruiting officers so anxious to fill up a regiment with men of good physique that candidates were encouraged to sit by when others were being tested so that they might train their memories, but we have all seen high spirited boys refused admission to one officers' training camp after another because of defective vision and later regarded as slackers and malingerers by their local boards because of the same defects and hurried off to the conscription camp.

\* Read at the Annual Meeting of the Medical Society of the State of New York at Albany, May 23, 1918.

I have been surprised at the comparatively small amount of ocular malingering coming before our advisory board, that is to say, defective vision for which no adequate cause could be found. I am sure there is very much less than there was. A year ago whole communities were utterly unconvinced that this was our war. Some of them were perhaps actually pro-German, others merely anti-English, while others were simply pacifist. The boy who evaded service not only incurred no social obliquy but was often regarded as a smart fellow. Nowadays the social pressure is all the other way, even among our foreign-born citizens who have been assiduously taught that America was the only land of opportunity without obligation.

The routine examination of men by the local board does not require the services of an ophthalmologist, those men being accepted who attain a certain vision without glasses. This can, if necessary, be done by a layman or a nurse.

The real difficulty comes when vision either with or without glasses is sub-standard or when exemption is claimed because of ocular lesions. This calls for a combination of ophthalmological and psychological acumen and also an equipment not to be found except in the office of the specialist and in some of the better clinics. Hence the Advisory Boards.

The Advisory Boards have had far more work to do than could in many cases be well done, and this applies particularly to ophthalmological examinations, more recruits being referred to this branch than any other, while competent ophthalmologists are relatively few and ocular malingering is time consuming.

In handling these cases the ophthalmologist should divest himself of all mental bias, his function being that of the judge rather than the advocate. We have all heard men declare that they certified nearly every recruit as class A, but to certify men who are likely to be weeded out after the expense of transporting them to camp and feeding them, is anything but patriotic service.

A most important thing to note is the mental attitude of the recruit. Most of them are not slackers though they may not have the avidity of the volunteer, but one can feel almost immediately the mental antagonism of the malingerer, who hesitates before each new test till he can figure out how he ought to answer.

The detection of the malingerer does not depend on any one or two classical tests but upon the ophthalmologist having at his fingers' ends an appreciation of what an eye ought to do under varying conditions, and on his ability to put the recruit rapidly in positions he has not anticipated. It is almost ludicrous sometimes to see a man who has gone through some of the complicated tests with flying colors fall for some elementary trick. The more intelligent he is the

easier he is as a rule to catch. The hardest case is the stupid man who will not fence. One has a much better chance of detecting fraud if he can make his man believe that he is going to be rejected and that the examination is a mere routine.

More difficult to classify is the man who has an organic defect which may or may not affect his vision. Lesions near the macula are not incompatible with good central vision, while the reduction in vision reasonably to be expected from a low refractive error, a small corneal macule or an unimportant retinal defect often require a very nice discrimination.

Few malingerers claim partial blindness in both eyes and fewer still total blindness. Both are difficult parts to play in a community where it is easy to learn the details of past employment. As a rule the recruit merely claims reduced vision or blindness in one eye alone, not enough to incapacitate him from some laborious job, or even for the lower draft classes, but not good enough for the firing line. Refractive defects are by all odds the commonest causes of rejection and when we consider their universality, the importance of giving them their just value and no more is apparent. Young men of the draft age should normally have such a reserve of accommodation that a hyperopia of four or five dioptres should easily be compatible with 20/100 vision. If, however, the patient has worn suitable correcting glasses for some time and become dependent on them, we have the paradox that the man who has taken care of his eyes is not as valuable as the man who has persistently neglected them. However, by making the hyperope do considerable reading at the near point with or without glasses it is often possible to irritate his accommodation enough to get him by the distant test without glasses, while the 20/40 with glasses is easy enough. The same thing applies more or less to hyperopic astigmatism. In all forms of astigmatism the vision can be sharpened up appreciably by approximating the lids. The myope of three dioptres should just fall short of 20/200, depending somewhat upon the size of the pupil and the approximation of the lids, and if he does not screw up his lids while being tested he is not trying, for every myope does this naturally. Among the garment workers of our east side the percentage of myopes is enormous. They all wear glasses fitted by opticians, which are invariably too strong, and the resulting spasm creates an apparent myopia far in excess of the real. In my opinion a myope whose error is not greater than three dioptres, who can show the integrity of the macula by reading No. 1 type ought to be certified even though his distant vision is below 20/200, because it will certainly improve materially in the better hygiene of camp life.

Tests for malingering should be reserved for

recruits whose subjective vision is not compatible with objective facts. If one had unlimited time it would doubtless be possible to detect all malingerers, but in the time available it is possible to use only a few of the many listed in our book.

*Routine of Examination*—After the identification, a casual inquiry into occupation as showing the visual acuity required in every day life while a question as to what the recruit thinks is wrong with his eyes will often give valuable psychological information. The slicker will invariably start a long story and you have to stop him long before he is through. A momentary examination with a pocket flash light will show any important external dioptric opacities in the cornea, the pupillary reactions and while the patient is off his guard enable you to determine whether he customarily fixes with one eye or both. Retinoscopy, without any cycloplegic, can be done by having the patient look off into the distance and so relax physiologically. It is of course only approximately correct but it saves a lot of time, gives you an idea what the patient ought to see without glasses and the kind of lens needed to improve it. Many of the older men can get the same result with the ophthalmoscope while going over the media and fundi. In testing the vision it is very important to sit and watch the patient rather than the test cards as so many men do. If you make him read off briskly keeping him under your eye while he does it, he has less time to figure things out. Try to conduct your tests in a way he has not been accustomed to with an appearance of carelessness and friendliness. Let him read with both eyes open at first and make him think you are testing his admittedly good eye when you are really blocking it out by strong glasses. Most malingerers are perfectly familiar with the requirements for vision in each eye, but they know nothing about the visual angle. They have been taught that to read below the top letter is fatal, but since we cut off the 20/200 line from our cards we have had many more class A men. The same thing applies to the lines lower down. In doubtful cases make several tests at different distances and see if consistent. Your honest man reads at full speed as far as he can and slows up only when he is not sure. The malingerer labors just as hard over the big letters as the small ones. One of the best means of detecting the malingerer is by the use of a mirror in which is reflected a reversed trial card. He is entirely unaware that the mirror has increased the distance and reads accordingly.

If one can contrive by casual remarks to a colleague for instance to make the slicker believe that you have found something in his eye which throws him out and that the rest of the examination is for purpose of record only he will often read much more freely. Oftentimes

a man whose vision without glasses is very poor will see remarkably well with a collection of lenses equivalent to zero.

Occasionally a man claims to be totally blind in one eye, even failing to see a light which contracts his pupil sharply. Instead of testing him laboriously with a candle and prisms it is much simpler to have him look at a flash light with both eyes open. Then if there is no evident squint, interpose a 5 degree prism before the good eye. If the fellow is really blind it will move with the good one in every direction while if binocular fixation is usual it will not move at all. Another very good test is the following. Almost all trial cases now contain the Maddox double prism. If this is put in a trial frame in front of the good eye in such a way that two lights are seen one above the other. The fellow eye is now uncovered, and it the recruit sees three candles, binocular vision is proved. It not you ask him to tell you when one flame disappears and whether the upper or the lower one, and at the same time gradually pass a card in front of the double prism in such a way as to block out half of it. If he sees two flames when the prism is half covered he is using both eyes. Then tell him to let you know when one of these disappears and gradually carry the card over the whole prism. If he says at once that he sees nothing at all he may be honest but if he tries to tell you which light disappeared first he is surely a liar.

If you put a four degree prism in front of the alleged blind eye, base up or down it will cause him no inconvenience if he is honest, while the overlapping of the two cards caused by the prism will be very confusing if he is a fraud.

The trouble with all these tests is that while they show the bad faith of the recruit they give no idea of his actual vision, sufficient for classification.

A better method is to fuss over the bad eye a little and apparently give it up as a bad job and then proceed to test the good one with both uncovered. It will very often be possible to gradually block out the good eye with a plus glass before the patient realizes that he is reading with his bad eye.

Have the patient read the test card through the ordinary Stevens phorometer with both eyes open. He will see one card up and one down and you can ask him to read the upper or the lower. If you then distract his attention by some question and quickly reverse the prisms he is very apt to try to be consistent and read the same upper or lower card without realizing that he is using the other eye in doing it.

Almost all the test books feature the so called red and green glass test in which the recruit with a red glass before one eye and a green glass before the other looks at a line of letters alternately red and green. This is a good test if the

letters are etched on glass, with suitable illumination behind them, and if the spectacle lenses are exactly the right color. In this case the red letters are invisible through the green glass and vice-versa. Unless the conditions are just right the test is of doubtful value, while it is not possible to get any variety of test letters.

A much simpler test is this. If you put a red glass before the recruit's good eye and by having him look at a light establish the psychological impression that he ought to see red with this eye, and not with the other, you can then direct his attention to a neighboring test card containing red letters and ask him to read rapidly. Of course red letters on a white card are invisible through the red glass.

The ordinary stereoscope can be made a most useful instrument in detecting malingerers. It should be used over the patient's distant glasses and the cards may be those commonly used in fusion training, part of each picture being seen with each eye. It is easy enough to make up your own cards with print for which the rapid reading requires the use of both eyes, and the reverse cards which can be read easily with either eye alone but not with both together. In using a stereoscope great care must be taken that the patient does not close his pretended bad eye and so deceive you.

The recruit who claims poor vision in one eye will generally admit very good in the other. For this type the bar reading test is a good one, having him read fine type with both eyes open while you hold a pencil or fountain pen vertically four or five inches in front of him. If he reads without hesitation or twisting of his head he must be using both eyes. This test can be adapted to distant vision by having a two-inch upright with a base placed on the floor about six feet in front of the trial card, so as to conceal one or more letters in each line from each eye while all are visible to both.

One of the simplest and best means of detecting the malingerer is the so-called diploscope of Rem. It consists essentially of a diaphragm with a central opening through which a row of letters is seen with both eyes open. The impression is that the letters are all seen with both eyes while as a matter of fact those on the left are seen with the right eye and vice-versa. The fakir who does not understand the principle involved is very apt to insist that he is seeing the right letters with the right eye, which is impossible. Unfortunately the device is not practicable for distant vision.

To meet this need I, like many others, have tried my hand at devising "Malingeroscopes" and have found this one the most generally useful and convenient. It consists of two short cylinders arranged opera glass fashion, but hinged at their proximal ends, so that they can be made at will slightly convergent, parallel or divergent. The

distal end of each tube is closed except for a six millimeter central aperture. The patient holds the instrument as he would a field glass and looks with both eyes open at two ordinary trial cards placed a few inches apart at a twenty-foot distance. When the instrument is adjusted so that the holes are the same distance apart as the pupils, the right-hand card is seen with the right eye and the left with the left eye. When the barrels are approximated slightly both eyes see the same card, while if the approximation be carried as far as possible the cards are seen the right with the left eye and the left with the right. The sensation, however, is of seeing both cards with both eyes, and reading either one at will. As the patient looks from one card to the other he has to turn both eyes slightly to the right to see the right-hand card, which gives him the sensation of using the right eye, when he is actually using the left, and vice-versa.

As he looks at the distant cards with either eye, the holes themselves being nearer than the object of fixation, appear more or less double and "crossed." If you cover the aperture in the right barrel it will seem as though the left had been closed and vice-versa. If you tell the malingerer that you will close the opening before his poor right eye and really put your finger over the left it looks to him as though he was reading with his better left eye.

If the two trial cards are exactly alike most patients will fuse them just as with a weak prism, and see only one card. If now extra letters are interpolated at different places on each card the malingerer will often read them all as though they were on one card thus not only showing binocular vision but also its degree. The possibilities of deceiving the recruit with the instrument, by one who is familiar with it, are considerable, the chief precaution being to sit where you can be sure he does not experimentally close one eye.

But after all it makes very little difference whether we catch all these malingerers or not, so far as the country is concerned. They would not fight under any circumstances, while the only task many of them are really fitted for, that of robbing the dead and finishing off the wounded, is not highly regarded in our army.

But there is another class of malingerer for whom I have a very tender feeling, the man who attempts to conceal visual defects so as to enter the service. Many of them are kept out on what are mere technicalities and are the very best of fighting material. We must not let our specialism run mad. No one seriously thinks Sir Douglas Haig less valuable because he is said to be color blind, desirable as it might be at times, to have a general see red. No one can seriously argue that England would have been better off for retiring the one-eyed Nelson. Many earnest people think that Roosevelt, one-eyed though he

is, would have acquitted himself nobly, in spite of the lack of binocular perspective that made him think the war so much less than 3,000 miles away. I feel that we are in duty bound to help the man who wants to fight by every legitimate means. All refractive defects are of course minimized by the pinhole disc, and maneuvers like showing the recruit how to get the same effect by screwing up his lids, or seating him in a bright light to contract his pupils are permissible. It might even be maintained that if we are allowed to use cycloplegics we might occasionally turn ourselves of miotics.

### Discussion

DR JOHN E VIPPEN, New York City. Having had something more than four hundred cases for examination of eyes, while on the Medical Advisory Board, I must say that I find the malingerers very few. My experience has been that probably more are trying to get into the army by their eyes than to keep out. I have even had a man with a glass eye insist that he must get into the army. He had been rejected by his Local Board, appealed on the rejection, and came before the Medical Advisory Board with the story that he wanted to get into the army. I told him he could not get in and he replied, "I can't fight, they won't let me fight but I can cook, I have been on board a ship as a cook, and I want to cook for the army." I said "You will go, if I can get you through." Our Medical Advisory Board passed him back to the Local Board for limited service.

The Board that I am on has had the experience of examining a great many of the Hebrew race and, of course, we know that the Hebrew is a myope. I think that every one who can get twenty thirtieths vision with glasses, and whose eyes have no pathological change should be certified for limited service. Thousands upon thousands of these men are today giving satisfactory service to their employers although they wear glasses, and they can do the same, or similar service, for Uncle Sam.

Dr Alger stated that if we could use mydriatics for certain purposes, would it be unwise to use myotics for certain purposes?

Not many days ago I had a young man in the office who has been rejected four five or six times for service. He is as anxious to get into the army as the man with the glass eye. With a little bit of training he was able to read the necessary line on the test card at my office. He came back the next morning and did the same thing. He went immediately from my office to the recruiting station and was accepted.

DR CHARLES H MOORE, Albany. What are you going to do with the man who pretends to have a great desire to enter the army, and you are conscious while you are testing his eyes that he is a malingerer?

We have met several of that class in our Advisory Board—men who say "I have tried to enlist I have been before this board and that board, and I have been turned down, but I wish to get in." All through the testing they seem to be doing their best but do not reach the required standard, yet you find by some little slip of their's that they are malingering and a careful testing proves this to be the case. You find they have not been accepted because they did not wish to be. That is the type of malingerer who really is a difficult one to detect. There are more of them than one would believe to be the case.

DR ALBERT C SNELL, Rochester. In place of the usual method of testing of the eyes with a big test card, with the large letters at the top and smaller ones at the bottom and all exposed to view, I have a card where only one line of letters at a time is exposed, and test is made beginning at the bottom line, which is a 20/10 line. At one time there were referred to me sixty-five men, all of whom presumably, had vision of less than 20/100, at least in one eye. Many were supposed to be malingerers. I lined these men up outside of the office door and had one of the Home Defense men in uniform usher them in one at a time. I began the visual test with my 20/10 line. A good many of them would give it to me right off. If they couldn't, I would go to the next line which was 20/15, then to 20/20, then 20/25 20/30, etc. By the time I had exposed my 20/30 line, they would all be making strenuous efforts to read it thinking that they had been doing pretty poorly, having missed so many lines of letters. Thus a great many had qualified and my task was quite easily done.

Another method I found practical which is also the psychological aspect of making these tests, is "to run them off their feet" by the rapidity of your tests. Have all your tests right at arm's length and make each test in quick succession, so that the one being tested has not time to think out his answer. The malingerer is usually caught quickly.

DR A EDWARD DAVIS, New York. I am sorry to say I didn't hear the paper but I would like to ask if the field of vision was considered?

DR ALGER. No.

DR DAVIS. There is one case I would like to report in this connection. It is the case of a lawyer who was thoroughly posted on all the tests. This man had been examined a number of times and he had read up all the regulations so he was well posted. He claimed not to see more than 10/200, and with correction 20/40 in each eye. Not seeing more than 10/200 in each eye would exempt him even from the second class, or limited service. I went through all the tests in many ways and yet he knew his little cues all right. Finally I said "Come in here in a little better light and I will make another test." I

made a rough test of the fields of vision. I took a piece of cotton (evidently he was up in the air), and while he fixed the tip of my finger, he allowed me to bring that piece of cotton to within five degrees of my finger and sometimes in actual contact with the finger. I said, "I will accept you." He couldn't have walked the streets with such fields of vision. Evidently he was lying.

"Well," he said, "I don't know anything about the field test, but I do not see."

I would suggest that that is a very good test when you have failed on the others, if they are not posted on the field test. In that way we caught this gentleman, who had thought he would escape service altogether.

DR SNELL. Just to illustrate the Doctor's recent point. I was able to prove that a man was a malingerer by that test just before I left home. A man claimed to be absolutely blind in one eye, and he seemed to be very well posted on all these tests, but had never heard of the field test. After the usual test I began by getting his field of vision. When I took his good eye alone, he could see to all parts of this field nicely, and when I finally uncovered the poor eye he wouldn't see the dial until I got to the central line of his good eye, which proved positively that he was a malingerer.

## MALINGERING FROM THE STAND- POINT OF THE EAR\*

JOHN A. ROBINSON, M.D.,

NEW YORK CITY

**M**ISREPRESENTATION in regard to the sense of hearing is occasionally the rôle of the malingerer, who may assume deafness without existing defect, or, if slightly deaf, may exaggerate his impaired hearing. The desire to secure compensation on the plea of industrial accident is the compelling motive in most cases. Not a little of the work of the otologist in the National Guard camps, National Army cantonments, and Medical Advisory Boards is the selection of those physically unsuited for military service and the elimination of the malingerer from this class. Others, moderately deaf, endeavor to conceal it to secure employment in some capacity which requires good hearing. The natural course for the slightly deaf to pursue is to exaggerate existing difficulty of hearing. The study of aural malingering has been neglected by otologists in the past, who have endeavored to establish the features of true disease.

In view of the recent examination of thousands of recruits and the increased opportunity for deception, the need for perfecting our power to distinguish between feigned and genuine deafness becomes urgent. It is necessary for those

who would attempt the unmasking of feigned disorders to be familiar not only with the normal aspect, but with aberrant manifestations. Nothing is more discreditable than the unwarranted diagnosis of malingering. Simulated deafness is said to be common in countries where military service is compulsory. In our country up to the present war, it was met with chiefly in the case of imposters seeking indemnity on account of pretended injury to one or both ears.

Simulated deafness may be divided into three classes: 1. Simulation of unilateral or bilateral difficulty of hearing; 2. Simulation of unilateral or bilateral deafness; 3. Simulation of subjective symptoms, tinnitus, pain, or vertigo.

The best method to adopt in the examination of an ordinary case of suspected malingering is to give no opportunity for the patient to doubt your belief in the genuineness of his claim.

I think it has been the experience of most of us that fully 90 per cent of the registrants are honest and respond promptly and truthfully to the tests applied. Occasionally a malingerer may appear before an examiner prior to the date set for his official examination to procure an affidavit of his defective hearing, sufficient to disqualify him from service, which he will take to the local Exemption Board. A physician is not averse to give such a paper, but if the board finds the allegation to be untrue the doctor is placed in a doubtful position.

*Method of procedure*—In the young, we look for congenital deafness, in the old, senile deafness, in females, hysteria. Past illnesses, such as the exanthemata, syphilis, meningitis, trauma, concussion of the labyrinth, as in gunfire, must be inquired into. The patient's occupation—such as machinist, boiler-worker, etc.—plays a rôle; Manner of onset, a deafness with no suggestion of injury, syphilis, or intra-cranial lesion, points to malingering. Total deafness suggests malingering.

*Physical examination of the ear*—It is important to establish objective evidences of disease. Hence, an early examination after accident is most important. We look for abrasions and scars on the auricle and mastoid process while cerumen, new formations, swellings, may occlude the meatus. Ruptures, cicatrices, evidence of adhesions, are revealed by a careful otoscopic examination. The nose should be inspected for deflected septa, hypertrophied turbinates, and the patency of the Eustachian tube established if possible. It is unfortunate that no constant relation exists between objective changes and impaired hearing.

For a comprehensive study of tests for the detection of malingering as it affects hearing, it is necessary to describe briefly certain fundamental principles regarding functional examination of the ear.

\* Read at the Annual Meeting of the Medical Society of the State of New York, at Albany, May 23, 1918.

*Tests for aerial conduction.* Aerial conduction of sound may be established by watch tuning fork, or voice. When using the watch it must be remembered that it can be heard at a greater distance when slowly removed from the ear than when brought from a distance toward the ear. Hold the watch at a distance from the patient's ear, gradually bring it nearer until he hears the ticking and note carefully the distance. Repeat the same procedure with the patient's eyes closed. He should hear the sound at the same distance but a malingerer with his eyes closed has lost his sense of orientation and there will be discrepancies in his answers. When using the whisper test, the examiner should stand to one side of the patient and see that he derives no help from the movement of the lips. By close observation at this stage of the examination the examiner may notice intentional exaggerations of difficulty in hearing, or, on the other hand, this may be more clearly demonstrated if it can be established that the range of hearing increases on continued testing. Further trials will show other variations, which he should be required to verify when he has given his answer. In this way, the patient's self-confidence is undermined.

*Tests for bone conduction.*—There are three methods, those of Rinne, Webber and Schwabach. When the external auditory meatus is closed and a vibrating tuning fork is placed on different parts of the skull, it will be plainly heard, because the closure of the meatus converts the cavity into a resonating chamber. When a vibrating tuning fork is placed on the vertex or forehead, the sound is localized in both ears if the hearing is normal. If one meatus is closed the sound will be localized in the ear of the same side.

*Rinne's method.*—The length of time that the sound can be heard when the vibrating fork is applied to the mastoid, as compared with the duration of the sound when the fork is placed close to the meatus, differentiates between normal hearing, disease of the sound conducting, and disease of the sound perceiving apparatus. A patient with normal hearing hears the sound several seconds longer when placed at the meatus than when applied to the mastoid. In case of nerve or labyrinthine deafness the same results are obtained but the duration of the sound is diminished through both the ear and the bone. Here Rinne's test is positive. In disease of the sound conduction apparatus or obstructive deafness, Rinne's test is negative, bone conduction is relatively increased the sound being transmitted through the auditory nerve while air conduction is diminished. Hence the tuning fork can be heard longer on the bone than when placed near the meatus.

*Webber's test.*—This is of value in cases of unilateral deafness. If the fork is placed

on the vertex, it is heard better in the deaf ear if the sound conducting apparatus is at fault, but when referred to the good ear it indicates a defect in the sound-perceiving mechanism.

*Schwabach's test.*—In bilateral deafness, if a vibrating tuning fork be placed upon the vertex it will be audible longer than normal in disease of the middle ear, and not so long as normal in cases of nerve deafness, the examiner taking his own ear as a control.

*Tests for simulated unilateral deafness.*—The underlying principle of a number of tests is the same, but they differ in technique. The object is so to arrange it that the patient's good ear is excluded from sounds without his knowledge. If he still hears, he does so with his alleged deaf ear. Mere closure of the ear does not necessarily cause complete deafness, for even with the ear artificially closed sounds of moderate intensity may be heard. In using the whisper as a test, we may make a feint to close the normal ear. If the patient claims he cannot hear the sound made, he is evidently deceiving, since the healthy ear is really open. This is accomplished by laying the hand over the ear in such a manner that a gap is left through which the sound can enter. The patient can also be asked to close his own healthy ear. He is most likely to press his palm against the ear or press the tragus into the meatus, both of which result only in apparent, not real closure of the ear. If he fails to hear, the inference of malingerer should be drawn. A malingerer can sometimes be caught easily. His pulse is felt with some ceremony, conjunctiva inspected and examined and then in a comparatively low tone he is requested to put out his tongue, a request sometimes receded to. By ostentatiously placing in the healthy ear a piece of rubber tubing with its lumen patent, we may confuse the malingerer. If he claims to be deaf under these conditions simulation is evident. The suspect thinking that his ear has been plugged, will probably say he hears nothing though little difference has been made in his audition. Or a closed speculum may be introduced in the healthy ear, and then the whisper test made. If the closure is complete no response will result. Subsequently and inconspicuously replace it by an open speculum. Then if the patient persists in being deaf, the simulation is proved.

*Tests with the tuning fork.*—Most of the tests in use are based on Webber's law, viz, that a vibrating fork applied to the vertex is heard more loudly in the ear which is closed with the finger or a plug. Thus in unilateral deafness when the sound conducting apparatus is impaired the tuning fork is heard in the diseased ear, but if the sound perception mechanism is involved in the healthy ear. If the healthy ear of a suspect is closed and the vibrating tuning fork is placed on the vertex he naturally thinks that to be con-

sistent he must deny all perception of sound. This must be false under such conditions and furnishes evidence of simulation. Again, if he claims difficulty of hearing, his attempted fraud may be unmasked. Thus, if a vibrating fork is placed on different points on his head, and he affirms that he hears it in the ear the hearing of which he alleges is impaired, and then when this same ear is plugged states that he hears it no longer, his intent to deceive is established.

The Office of the Surgeon-General reports favorably on the use of the Wagner-Malingere-Phone for the detection of unilateral malingerers of deafness. The instrument has a funnel-shaped post like that of the stethoscope, which receives the sound. The receiver is connected by rubber tubing with a metal Y-shaped tube, from which again two rubber tubes extend to two funnels large enough to cover the external ear. The tubing should be at least two metres in length. The examiner places himself behind the patient with a  $C_2$  fork for testing bone conduction in the usual manner. At the same time that the vibrating fork is placed on the vertex, an assistant places a vibrating fork at the receiving end of the phone, so that the patient now receives synchronous sounds by air and bone conduction, which is confusing to him. After some moments of this, the fork is placed on the head without vibrating, the only sound that reaches the patient therefore being that coming through the tube by air conduction. The tube leading to the hearing ear is occluded by finger pressure, and if the patient still admits hearing malingerer is proved.

A simple and always available test is with the binaural stethoscope. The ear-piece to be applied to the normal ear is packed tight with cotton or wax and the instrument put in position. The examiner speaks in a soft tone or counts into the bell of the stethoscope. The tubes are removed and the assistant is told to plug up the hearing ear. The same words or numerals are repeated. The suspect will now claim failure to hear the words which he had previously heard through the tube in the ear stated to be deaf.

*Lombard's test*—If a patient with a genuine unilateral deafness be made to read aloud, and one suppresses the hearing alternately on each side, the patient immediately raises his voice when the sound ear is occluded, as he no longer can hear himself speak. His voice, however, resumes its normal tone as soon as the sound ear is released and hearing is restored clearly. When a man hears naturally with both ears, he does not raise his voice when one ear is plugged, for he continues to hear with the other. The Barany noise apparatus may also be used in making this test. Here the patients will fairly shout to make themselves heard.

By the use of a continuous series of tuning forks, Bezold detects the finer shades of deafness

With them, we can ascertain the range of hearing which in a normal person extends from 26 V D to 50,000 vibrations with the Galton whistle. In diseases of the auditory apparatus there is a loss of the higher and lower tones of the scale.

*Gowseef's brush test* consists in stroking the back of a patient alternately with the hand and with a brush, and after that the back is stroked with the head while the physician's sleeve is simultaneously stroked with the brush. If the patient is really deaf, he will answer correctly whether his clothes are being stroked with the hand or a brush, as during the operation he solely trusts to his sense of feeling, the malingerer, on the other hand, will contradict himself in his replies, as he does not know exactly whether the pressure is the result of the contact of hand or brush, the noise of which he hears. Dufourmental cites eleven tests for malingerer. An interesting one is the cochleo-palpebro reflex, which consists in involuntary winking when a sudden loud sound is heard close to the ear. This is satisfactory for simulated bilateral deafness.

Advantage may be taken of the fact that a simulator does not learn to read the lips like the truly deaf, and therefore if a voice drowns what is being said, he fails to read—showing that he was depending upon hearing rather than upon his vision. Repeated tests made at intervals, together with weighing objective appearance and data from reliable history and comparing these with previous experiences afford the best prospects of success in detecting malingerer.

Deception may be the mono-symptomatic manifestation of hysteria. In this case time alone will clear up the diagnosis. Variability in the results obtained by tests is by most experts regarded as a sure index of simulation. Chauvigny remarks that a true malingerer will fail in some, not all, tests.

*Simulated bilateral deafness*—A patient who alleges total deafness is hard to unmask, if in all respects he plays his part well. This is difficult, and he is apt to be inconsistent. When he should be aware of the falling of a heavy body nearby, he will not give evidence of doing so. Deaf persons are apt to speak in a loud voice or a monotone. They often have a peculiar cast of countenance and are said to keep their mouths open to hear better. The partially deaf patient endeavors to catch words or to divine their meaning, often turning the good ear to the speaker. The patient who is totally deaf is passive and make no effort to catch the drift of conversation. If taken unawares, a patient will show by his expression when abruptly called by name. Dropped coins may cause him to turn. An alarm clock may be timed to go off during the examination. The patient may be called during sleep, care being taken to prevent the breath from touch-

ing the auricle. Dolger has observed that a malingerer often exhibits the corresponding lip movements although he makes no sound. A careful functional examination must be made even though the patient's behavior be in doubt. It is necessary to learn whether the deafness is genuine. If there is no involvement of the outer or middle ear lesions of the internal ear, hysteria and simulation are to be considered. Internal ear deafness is characterized by a pronounced loss of bone conduction and a marked diminution of the upper tone limits as compared with the lower tone limits. In patients complaining of vertigo with or without impairment of hearing, the result of head injury or simple cerebral concussion, the tests for vestibular irritability are to be made. By employing the rotation, caloric, past-pointing, galvanic tests the condition of the labyrinth may be ascertained.

*Hysterical deafness*—The differentiation of hysterical deafness from middle ear deafness is difficult as the test in both ears may be similar. The difference lies in the fact that in hysteria it may be possible to prove that the patient does hear but is not conscious that he does so. Other factors determining a diagnosis are the sex of the patient, abrupt onset, and the presence of other stigmas of hysteria. Hysterical deafness is characterized by its marred dependence on mental states, amenability to cure by suggestion or its sudden disappearance.

It is difficult to distinguish between simulated bilateral and hysterical deafness. The unjust diagnosis of malingering is apt to occur. We should be cautious of making a diagnosis of simulation in a perfectly deaf person. The method of surprise advocated by Chavasse and Joubert consists in blindfolding the patient and applying a mild Faradic current to the arm. Then in a conversational tone, remark that the current will be increased to the point of pain, an increased pulse-rate, stiffening of the arm, would indicate that the patient had heard the remark. Anesthesia with chloroform has been employed. While partly under its influence questions were put to the patient and if replied to, malingering was inferred. French army physicians hold public inquiries. These might be of service in civil cases in which deafness is attributed to injury. Finally, eyes may be closely watched while confined to a hospital.

*Deafness in relation to accident*—Lesions of the external or middle ear do not exclude simulation. No constant relationship exists between the degrees of structural changes and measure of functional capacity for hearing. An individual may not be noticeably deaf in spite of total destruction of the drum membrane or the presence of exostoses, or calcareous deposits. On the other hand, impaired hearing may be coincident with normal Eustachian tubes and normal tympani.

As a rule, however, perforations and permanently retracted tympani are usually followed by more or less loss of hearing. A wide experience in otology is necessary for an opinion if an existing lesion adequately accounts for an alleged deafness. If deafness is the result of accident, an early examination is necessary.

Deafness may follow labyrinthine concussion caused by loud noises, explosions, etc. For the employer to be responsible, it is necessary that the deafness be instant. Auditory hyperesthesia and tinnitus may be referred to as the result of an industrial accident. The deafness of boiler makers, blacksmiths, etc., cannot be regarded as industrial accidents.

*External and middle ear lesions*—If these are of recent origin, they will be evident. Hearing may be impaired indirectly by a blow on the chin or a basal fracture. The drum membrane may be ruptured by direct or indirect violence, sudden compression, decompression or explosion. If the rupture is recent the edges will be ragged, covered with dry crusts of blood, with no inflammation except at the point of rupture. In these cases deafness as a rule, is slight, and usually passes off in a short time. If the rupture is old the edges are thickened, not so irregular, and the membrane is hyperæmic. Calcification of the margins indicates that the rupture is at least three weeks old. The middle ear is apt to be infected.

*When deafness pre-exists*—Patients occasionally have a unilateral deafness and may not be aware of it. A man may be conscious of his impaired hearing only after an accident, and will claim compensation without fraudulent purposes. He was ignorant that it existed. Again, persons will assert that a chronic suppurative otitis was due to an accident. Here the question arises: Is a purulent otitis acute or chronic? Old suppurations are characterized by partial or complete destruction of the membrane tympani, with its gray color and foul odor of the pus. It may be well to remember at this point that condensed milk, butter, cheese, may be inserted into the meatus to simulate discharge. Non-suppurative otitis with labyrinthine involvement occasionally follows trauma to the head or chin, violent noises, and shell explosions. Cruvel believes that a traumatic origin for such conditions should be conceded if deafness is unilateral, but trauma as a cause should be accepted with reserve in persons of forty-five and over. Following an accident a patient may have symptoms of vestibular irritation, vertigo, attacks of vomiting and tinnitus, yet be unaware of a mild degree of deafness, and seek relief only from his labyrinthine symptoms. On examination his deafness is detected. Labyrinthitis may follow fracture of the petrous bone, surgical lesions of the semi-circular canals, or any accident that causes labyrinthine concussion. Hochworst claims that trauma may provoke labyrinthitis.

labyrinthine symptoms in persons the subject of pre-existing aural disease. We should be cautious in accepting the imputation of symptoms of vestibular irritation to accident. Vertigo and tinnitus may be associated with hysteria, be a complication of traumatic neurasthenia, or the aura of an epileptic attack.

Did the accident aggravate an existing deafness? The observations made by Lanoir and Chauvanne during the present war demonstrate that soldiers who suffer from pre-existing aural disease are more liable to increased deafness from cranial trauma or labyrinthine concussion from high explosives than individuals with normal hearing.

In the study of 8,000 cases up to April 16th, Canyut observes "In the majority of soldiers who return from the front with material lesions of the hearing apparatus, the ear was not sound before the war. They had suffered from old suppurations from unhealthy drum heads with and without perforations, and in particular the tympanum had been ill-ventilated. In a considerable number of those examined, the patency of the nose and Eustachian tubes was diminished by obstructions such as spurs, hypertrophied turbinates, deviations, thickened septa and large adenoids."

#### Discussion

Dr GEORGE F. COTT, Buffalo. There is one point that I would like to make regarding hysterical deafness.

Hysterical patients act about alike. If you apply all the known tests to the hysterically deaf ear, they hear absolutely nothing, apply these same tests to the opposite ear and hearing is perfect. Now that is characteristic of hysterical deafness. If you place any of the tuning-forks against the mastoid, or anywhere on that side of the skull where deafness is supposed to be, they will hear nothing. If you apply it close enough, without touching the bone, where the sound ought to be carried to the other side, they hear absolutely nothing. Now apply these tuning-forks or the acumeter to the opposite side, and the hearing is perfect. Now that is hysterical deafness. If you apply the tuning-fork on the mastoid they certainly ought to hear on the opposite side, which they claim they cannot.

Now the question arises, do these patients ever recover or are they totally deaf? That is a very great question to decide. We don't doubt it is hysterical deafness. There is a certain amount of affection of the nerve on that side, which ought to gradually recover, and yet I am sorry to say that many of them are totally deaf and remain so, even though they try to make you think they do not hear with the opposite ear when you place the tuning-fork on the diseased side. That question hasn't been answered yet, as far as I know, that these patients actually recover.

I have in mind now three of them that have had this form of deafness, that haven't made the slightest improvement in nearly two years. There is a question in my mind, whether they won't remain totally deaf?

Dr ROBINSON. In the last six years, so far as I can recall, there have been two cases of hysterical deafness referred to us in the Neurological Institute, so you see they are comparatively rare. Both those cases recovered their complete hearing within three and six months after the initial complaint.

## Medical Society of State of New York

### New York State Journal of Medicine

A title page for the 1918 edition can be procured by those desiring to have their JOURNALS bound, by applying to the

MEDICAL SOCIETY OF THE STATE OF NEW YORK,  
17 West 43d Street, New York

### County Societies

#### MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER

ANNUAL MEETING, WHITE PLAINS, N. Y.,  
TUESDAY, NOVEMBER 19, 1918

On the invitation of Dr William L. Russell, the meeting was held in the Bloomingdale Hospital, White Plains. Sixty-two members were present.

The following officers were unanimously elected for the ensuing year: President, William L. Russell, White Plains; Vice-president, Clarence C. Guion, New Rochelle; Secretary, William H. Purdy, Mt. Vernon; Treasurer, Lawrence F. Rainsford, Rye; Censors, Henry Moffat, Yonkers, Nathaniel H. Ives, Mt. Vernon, Carl Osterheld, Yonkers; Delegates, William H. Purdy, Mt. Vernon, John F. Black, White Plains; Alternates, Edward F. Briggs, Bedford Hills, Frank A. M. Bryant, Mt. Vernon.

Annual reports and recommendations from the chairman of standing committees were read and accepted.

The treasurer reported a balance on hand of \$216.85 and stated that the membership was 286, an increase of only one member during the past year.

The chairman of the special committee for national defense reported that Westchester County was represented by 123 men in the Medical Reserve. Of this number eighty-three are members of the society. This list is not complete, however, as it is very difficult to obtain the names of the men who are in service, but is approximately correct.

The retiring president, Henry Moffat, M.D., of Yonkers, thanked the society for its cooperation during the past year both in attendance and interest they had shown. The average attendance of the meetings had been fifty-eight.

The business meeting was followed by the scientific session.

"Bacteriology of Influenza," Charles Krumwiede, M.D., New York City Board of Health.

"Symptomatology of Influenza," Walter L. Niles, M.D., New York City.

"Pathology of Influenza," L. B. Goldhorn, M.D., Mt. Vernon.

A discussion followed by Clarence W. Buckmaster, M.D., health officer, Yonkers, Edward W. Weber, M.D., health officer, White Plains, which was joined in by all present.

# MEDICAL SOCIETY OF THE COUNTY OF CLINTON

ANNUAL MEETING PLATTSBURG N Y

TUESDAY, NOVEMBER 19 1918

Owing to the influenza and the ensuing difficulty of getting the doctors together for a meeting the Comitia Minora had previously decided to hold only a business session

The meeting was called to order in the City Hall and the following officers were elected for the ensuing year President William U Taylor Mooers Vice president Arthur A de Grandpre Plattsburg Treasurer Jefferson G McKinney Plattsburg Secretary William H Ladue Morrisville Delegate to State Society Mahlon B Holcombe Keeseville, Alternate Jefferson G McKinney Plattsburg

The treasurer Jefferson G McKinney M D reported all bills paid with a balance left in the treasury

The question of remitting the dues to the State Society of absent members was discussed and left open the society expressing its willingness to do as directed by the State Society

# MEDICAL SOCIETY OF THE COUNTY OF SULLIVAN

ANNUAL MEETING LIBERTY N Y

WEDNESDAY OCTOBER 9 1918

The meeting was called to order in the Liberty House and the following officers were elected for the ensuing year President Charles E Patterson Liberty, Vice president Augustus Mayer Callicoon, Secretary and Treasurer Luther C Payne Liberty Censors, Julius M Rosenthal Monticello Bertram H Waters Loomis J Cameron Gain Jeffersonville, Scott B Schleiermacher, Wurtsboro Benjamin S Antonow sk Liberty

The scientific program consisted of an x ray demonstration and talk by Charles Raveisky M D of Liberty followed by discussions by Emanuel Singer, M D Liberty Leopold Rosenberg M D Liberty and Andrew Peters Jr M D Loomis

On invitation of Dr Waters it was voted to hold the next meeting of the society at the Loomis Sanitarium

# MEDICAL SOCIETY OF THE COUNTY OF SARATOGA

ADJOURNED ANNUAL MEETING SARATOGA SPRINGS

WEDNESDAY NOVEMBER 27, 1918

After calling the meeting to order the following officers were elected for the ensuing year President George F Comstock Saratoga Springs, Vice president Patrick J Hirst Middlegrove, Treasurer Frederic J Resseigne Saratoga Springs Secretary James I Sweetman Jr Ballston Spa Censors Henry J Allen Cornith Horace J Hawk Mt McGregor and Louis A Parmenter Cornith Delegate to State Society George S Towne Saratoga Springs

A resolution was passed instructing the Treasurer to remit to the State Treasurer the dues of members in active military service

Captain Frank F Gow of Schuylersville gave an interesting talk upon his experiences and observations in service in France

Herman C Gordinier M D of Troy read an instructive paper on Angina Pectoris

# MEDICAL SOCIETY OF THE COUNTY OF MADISON

ANNUAL MEETING ONEIDA N Y

TUESDAY OCTOBER 1 1918

After calling the meeting to order the following officers were elected for the ensuing year President Martin Cayana Sylvan Beach, Vice president Lee S Preston, Oneida Secretary George W Miles Oneida Treasurer Nelson O Brooks Oneida, Delegate to State Society Nelson O Brooks Oneida Censors Charles H Perry Oneida William Taylor Canastota Martin Cayana Sylvan Beach

Owing to the influenza epidemic and the number of men in service no scientific session was held

# MEDICAL SOCIETY OF THE COUNTY OF OSWEGO

ANNUAL MEETING OSWEGO N Y

NOVEMBER 19 1918

The meeting was called to order at the Pontiac Hotel at 10:30 A M

An amendment to Section 1 Chapter IX of the By Laws was taken from the table and passed directing the President and Secretary whenever a regular meeting conflicts in date with a State or National meeting to make such change of date as will avoid conflict

The following officers were elected for the ensuing year President Edward M Anderson Fulton Vice

# MEDICAL SOCIETY OF THE COUNTY OF COLUMBIA

ANNUAL MEETING HUDSON N Y

OCTOBER 8 1918

The meeting was called to order in the Worth House at 11 A M

The dues of seven members of the society Drs N P Brooks O H Bradley J L Edwards H C Galster N D Garnsey J W Lambert and H M Southworth in the Medical Reserve Corps were ordered paid out of the funds of the society

The following officers were elected for the ensuing year President Clark G Rossman Hudson Vice president George W Vedder Philmont Secretary and Treasurer Charles R Skinner Hudson

Dr Herman C Gordinier of Troy read a paper on 'Angina Pectoris' covering many unique and unusual experiments

Dr Harold Sawyer of Troy also addressed the meeting giving an account of his experiences at the front in France and of the admirable work being done at the base hospitals

# MEDICAL SOCIETY OF THE COUNTY OF RICHMOND

REGULAR MEETING NEW BRIGHTON

NOVEMBER 11 1918

The meeting was called to order in the Staten Island Academy at 9 P M the president John D Lucey M D presiding

The minutes of the September meeting and of a special meeting held on October 23 1918 were read and approved as read

The motion was regularly made and carried that the officers and delegates of the society be renominated for the year 1919

Representatives from the Staten Island Federation of Welfare Agencies were present seeking the counsel of the society regarding the after care of influenza cases

After extended discussion the motion was regularly made and carried that the society endorse the work of the Board of Health as carried on among influenza cases in the Borough of Manhattan and recommended that the same system be followed in the Borough of Richmond

Dr William B Pritchard of Manhattan read the paper of the evening taking as his topic 'Some Unique Experiences Dramatic and Humorous'

A note of thanks was extended Dr Pritchard for his interesting paper The meeting then adjourned to the Staten Island Club where a collation was served

President, Louis de L. Pulsifer, Mexico, Secretary, Walter H. Kidder, Oswego, Treasurer, Harriet M. Doane, Fulton, Censors, Le Roy F. Hollis, Lacona, Emory J. Drury, Fulton, Pascal M. Dowd, Oswego, Jeremiah T. Dwyer, Oswego, Arthur W. Irwin, Oswego.

Dr. F. L. Sin Clair read a paper on "Heart Neurosis," which elicited much discussion. Dr. James C. Ayer of New York, who came at the request of the State Department of Health, demonstrated the administration of arsenamine, giving it to four patients who had volunteered for the clinic, and bringing to the members of the Society a realization of the wisdom of a freer use of this drug in lues.

The discussions of Col. Thomason and Dr. Lowen-good were omitted because of their inability to be present. Major Cornwell opened the discussion of Syphilis and was followed by Lieut. Newman, who demonstrated a new and successful adaptation of the method of administering mercury by inhalation, exhibition cases in whom this treatment had produced such good results as to impress the observers with the belief that this treatment represents a revolutionary advance in the treatment of syphilis.

### MEDICAL SOCIETY OF THE COUNTY OF GREENE

ANNUAL MEETING, CAIRO, N. Y.,

TUESDAY, OCTOBER 8, 1918

The following members were present: Alton B. Daley, Edwin H. Huntington, George Conklin, Alfred O. Persons, Robert Selden and Charles E. Willard.

The following officers were elected for the ensuing year: President, Edwin H. Huntington, Cairo; Vice-President, Dean W. Jennings, Catskill; Secretary, Robert Selden, Catskill; Treasurer, Charles E. Willard, Catskill; Chairman on Legislative Committee, Percy G. Waller, New Baltimore; Public Health, John L. Loutfian, Coxsackie; Delegate to State Medical Society, Robert Selden, Catskill; Alternate, Alton B. Daley, Athens.

The President read a short paper reviewing the work of the year which was followed by an informal discussion on the "Epidemic of Influenza."

After the reading of the reports of the Treasurer and Secretary, the meeting adjourned until the second Tuesday in January, at Catskill.

The following members were reported as having gone in the service: Horace G. Baldwin, Tannersville; Ray E. Persons, East Durham; George L. Branch, L. Breslau; Honeyford and Dean W. Jennings, all of Catskill.

### MEDICAL SOCIETY OF THE COUNTY OF ALLEGANY

ANNUAL MEETING, BELMONT, N. Y.,

THURSDAY, OCTOBER 10, 1918

The following members were present: Earl D. Kilmer, William J. Hardy, Lloyd S. Benedict, Nathaniel H. Fuller, Malsolm E. House, Fitch H. Van Orsdale and Chauncey R. Bowen. Harvey P. Jack, visitor.

After the reading of the report of the Treasurer, the following officers were elected: President, Earl D. Kilmer, Rushford; Vice-President, Theodore S. Thomas, Cuba. The present Board of Censors were re-elected for another year.

Following the business session, a very interesting paper "Notes on Tuberculosis," was read by Earl D. Kilmer, M.D.

An interesting talk on "Appendicular Dyspepsia," was given by Harvey P. Jack, M.D. of Hornell. Both papers were discussed by the members present.

## Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

**VACCINES AND SERA** Their Clinical Value in Military and Civilian Practice. By A. GEOFFREY SHERA, B.A., M.D., B.C., Cantab., M.R.C.S. England, L.R.C.P. London, Honorary Captain R.A.M.C., Clinical Pathologist British Red Cross Hospital, Netley. With an Introduction by Sir CLIFFORD ALLBUTT, K.C.B., M.D., F.R.S., Regius Professor Physic, University Cambridge. Published by the Joint Committee of Henry Frowde and Hodder & Stoughton at the Oxford Press Warehouse, London, 1918. Oxford University Press, 35 West 32nd St., N.Y. Price, \$2.50.

**THE NEWER KNOWLEDGE OF NUTRITION** The Use of Foods for the Preservation of Vitality and Health. By E. V. McCOLLUM, School of Hygiene and Public Health, The Johns Hopkins University. Illustrated. Published by the Macmillan Co., New York, 1918. Price, \$1.50.

**SAJOUS'S ANALYTICAL CYCLOPEDIA OF PRACTICAL MEDICINE** By CHARLES E. DEM SAJOUS, M.D., LL.D., Sc.D., assisted by LOUIS T. DEM SAJOUS, B.S., M.D., with the active cooperation of over one hundred associate editors. Seventh Edition, revised and enlarged. Illustrated with full-page half-tone color plates and appropriate cuts in the text. Volume Nine, Index-Supplement. F. A. Davis Co., Philadelphia, 1918.

**THE DISEASES OF INFANCY AND CHILDHOOD** By HENRY KOPLIK, M.D. Fourth Edition, revised and enlarged. 928 pages, illustrated with 239 engravings and 25 plates in color and monochrome. Philadelphia and New York: Lea & Febiger, 1918. 8vo. Cloth, \$6.00.

**WAR SURGERY OF THE ABDOMEN** By CUTHBERT WALLACE, C.M.G., F.R.C.S., England, M.B., B.S., London. 152 pages, with 26 illustrations. Philadelphia: P. Blakiston's Son & Co., 1918. 8vo. Cloth, \$3.00.

**WAR WOUNDS OF THE LUNG** NOTES ON THEIR SURGICAL TREATMENT AT THE FRONT. By PIERRE DUVAL. Authorized English translation. 99 pages, with 27 plates and illustrations. Bristol: John Wright & Sons, Ltd., 1918. Cloth, 8/6 net.

**ANATOMY OF THE HUMAN BODY** By HENRY GRAY, F.R.S. Twentieth Edition, thoroughly revised and re-edited by WARREN H. LEWIS, B.S., M.D. 1,396 pages, illustrated with 1,247 engravings. 8vo. Philadelphia and New York: Lea & Febiger, 1918. Cloth, \$7.50; Leather, \$9.00.

**THE AMERICAN HOSPITAL OF THE TWENTIETH CENTURY** By EDWARD F. STEVENS, Architect. 274 pages, illustrated. 8vo. New York: Architectural Record Publishing Co., 1918. Cloth, \$5.00.

**MORTALITY STATISTICS** Department of Commerce, Bureau of the Census. Seventeenth Annual Report, 1916. Washington: Government Printing Office.

**THE EFFECT OF DIET ON ENDURANCE** By IRVING FISHER, Ph.D., Professor of Political Economy, Yale College, Chairman of the Hygiene Reference Board of the Life Extension Institute. Published by the Yale University Press, New Haven, Connecticut and New York City. 1918. New and Revised Edition, 60c.

## Book Reviews

**WAR WOUNDS OF THE LUNG. NOTES ON THEIR SURGICAL TREATMENT AT THE FRONT.** By PIERRE DUVAL. Authorized English translation. 99 pages with 27 plates and illustrations. Bristol: John Wright & Sons Ltd. 1918. Cloth, 8/6 net.

It is a most opportune time to present this book for review while the author is travelling in this country and receiving many tokens of the honor which is his due.

The French Government has shown its appreciation of Pierre Duval by appointing him consulting surgeon to all the French armies.

Surgery of the lung has been revolutionized during the war and to Pierre Duval more than to any other man will the credit for this be given for he has popularized lung surgery, has proved that incision, partial resection and suture of the lung are possible without the use of any complicated apparatus. He has urged preventive treatment by the removal of foreign bodies and the direct treatment of the lung wound and by his example and teaching has inspired many others to follow in his footsteps.

One startling statement alone would focus attention upon his work. Speaking of pulmonary hemorrhage from a wound of the lung he says: "One can say that as long as these cases remain alive one can hope to save them by directly arresting the hemorrhage from the lung. The operation can be performed when laparotomy would not be tolerated."

In this little volume are set forth in an interesting and orderly way the observations and deductions that have logically led to an extension of the field of wound surgery. The statistics are convincing and the operative technique is so clearly described that "He who runs may read."

Those who wish to keep abreast of the times in surgical thought and practice cannot afford to leave this book unread for it marks another milestone in progress—an epoch in surgical history.

As Duval says: "The day of lung surgery is just dawning and we do not realize our power."

HENRY F. GRAHAM

**COMMOTIONS ET EMOTIONS DE GUERRE.** Par ANDRÉ LÉRY. 196 pp., avec planches. 12mo. Paris: Masson et Cie. 1918. (Collection Horizon.) Paper. 4 fr.

This little treatise is particularly appropriate at this time when medical literature is replete with reports and discussions of shell shock. It is prefaced by an introduction by the eminent neurologist Pierre Marie whose approval should command respect. The author divides the cases into commotion (or concussion), confusion and emotion. His description of commotion corresponds to our old conception of concussion whether direct or indirect where there is no organic injury to the cells or vessels of the brain medulla or cord. In this class of cases there are seen somnolence, prolonged slumber and complete amnesia as to events immediately following the shock. Confusion involves actual traumatism of the central nervous system with its resulting symptoms of paralysis, paresis, amnesia, aphasia, etc. Emotion is a state of nervous agitation, fear, exaggerated reflexes, irrationality of speech, extreme sensitiveness to sound, there is somnolence without sleep, insomnia being the rule with sometimes hallucinations or battle scenes.

The condition of patients of each of the three classes is described as seen first at advanced stations and then later at base hospitals. The treatment of commotion is lumbar puncture as the cerebrospinal fluid is under great pressure while in confusion the question of trephining comes up if signs of compression appear.

Emotion cases are always fatigued physically and are benefited by hypodermic injections of camphor in

oil—later they require strict firm though gentle discipline, exercise work, combating of inertia and prevention of auto suggestion.

This is a work well worth reading especially for men in the medical branch of the army and is written in a pleasing style by a man who gives the impression of knowing his subject thoroughly and whose knowledge has been acquired first hand at the front.

W. H. DONNELLY

**LA SUSPENSION DANS LE TRAITEMENT DES FRACTURES.** Appareils Anglo-Américains. Par P. DESPOSES et CHARLES ROBERT. 172 pp. avec figures et planches. 12mo. Paris: Masson et Cie. 1918. (Collection Horizon.) Paper. 4 fr.

The suspension method of treatment of fractures seems to have almost completely superseded all other methods in the war zone in the past three years.

Credit is given in this volume to both English and American surgeons for this advance and the method is called the Anglo-American.

To Dr. Blalé formerly of New York and now of Paris and to Pierre Oranger and to Major Sinclair, of the British Royal Army Medical Corps are due the excellent results now attained in fracture cases, results so excellent indeed as in the words of the authors to approach perfection. In fractures of the arm the Thomas splint is largely used as also is the hammock method of Blake and the Gassette apparatus.

A feature to be noted with interest is the gluing of a cotton or stockinet glove to the hand and running cords from the finger tips to a board attached to a Thomas splint for extension.

In fractures of the lower extremities considerable attention is devoted to methods of traction. Here the adhesive bands, the sole and the skate, all inventions of Major Sinclair are fully gone into and clearly illustrated. The various metal devices to be attached to the os calcis for traction are described including Chitro's brand Steinmann's clamp, Wilms' screws, and finally the garter or boot attachment. In complicated or multiple fractures especially with lacerations an ingenious method of total suspension of the body is depicted which can be utilized either to keep the patient entirely and continuously free from the pernicious pressure of the bed or to raise him at the time of dressing his wounds so as to facilitate and expedite this procedure.

The work is so well illustrated that a knowledge of French is hardly necessary to derive great benefit from its perusal. It would seem that even a man inexperienced in traumatic surgery might do good work in a military capacity if he had this little volume conveniently at hand for reference.

W. H. DONNELLY

**MILITARY SURGERY OF THE ZONE OF THE ADVANCE.** By GEORGE H. TARNOWSKY, M.D., F.A.C.S., Major M.C., U.S. Army, American Expeditionary Force, France, 1917. 1918. 330 pp. Illustrated. 16mo. Cloth. \$1.50. Philadelphia and New York: Lea & Febiger. 1918. (Medical War Manual No. 7.)

This compend on Military Surgery of the Zone of Advance is a splendid piece of work. The author has culled from the voluminous literature on war surgery much that is of practical use and has edited it in concise form. It is written essentially for the medical officer who well grounded though he be in the principles and practice of his art in the times of peace finds himself now confronted with an environment and a class of traumatic lesions foreign to him.

War surgeons emphasize the necessity of radical excision of all lacerated tissue, particularly muscle tissue and the tendency is to attempt primary suture when the wound is less than eight hours old. The excised areas are closed by tier sutures care being taken not to leave pockets.

Intra-abdominal wounds are operated upon as early as possible. The author tells us that "the general trend of present day war surgery is not to drain the abdomen."

In the treatment of "Cranial Injuries" the English and French surgeons differ very widely. Their conclusions are worth copying. English School (Makins, Hull, Sargeant, Holmes, etc.)

(1) Removal of foreign bodies

(a) The question of the removal of metallic fragments is difficult to decide, in as much as their ultimate fate and their possible effects upon the surrounding brain are at present uncertain

(b) Primary removal of deep seated missiles carries with it the additional risk of sepsis. Many patients with foreign bodies deeply lodged in the foreign brain recover

(2) Intracranial pressure

(a) Apart from the rare instances of extensive intracranial hemorrhage, traumatic edema, while playing an important part in symptomatology does not reach a sufficient degree of intensity to endanger life

(b) The instances of intracranial hemorrhage not rapidly fatal are very few, and even among these there are a certain number which surgical intervention is not likely to save

(c) Experience has shown that an intracranial hemorrhage which is not sufficiently severe to demand operative relief, and which can be recovered from, gives very unmistakable signs of its progress

(d) Exploratory operations on the chance of discovering a hemorrhage are rarely, if ever, called for. French School

(1) All head injuries should be explored immediately upon arrival at a designated hospital, regardless of the hour of the arrival and the date of the wound

(2) It is better surgery to explore ten head injuries without finding a single fracture than not to explore and miss a single fracture or hemorrhage

HARRY R. TARBON

**NAVAL HYGIENE.** By JAMES CHAMBERS PRYOR, A.M., M.D., Medical Inspector, United States Navy, Master of Arts in Hygiene, Johns Hopkins University. Published with approval of the Surgeon General, U.S. Navy, and by permission of the Navy Department. With 153 illustrations. The price of this book is \$3 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Pa. 1918

This book is made for practical service from its rough uninviting brown burlap binding to its unusually good index. It is of pocket size, the paper is of thin texture with a glazed surface which makes possible compactness and the proper reproduction of photographic illustrations

It is hard to conceive of anything which could be added or of any ground which has not been covered by the writer

There are chapters on air, heating, water, light, food, clothing, facilities for the care of the sick aboard ship, recruiting, aviation, submarines and diving

Other subjects discussed are the hospital ship, the care of men on the march, seasickness, sputum-borne and other infectious diseases, disinfection and the disposal of the dead

There is an appendix on the physical examination of recruits for the navy and marine corps with an extremely interesting and complete article on finger-prints

The book is concise, clear and compact, and, even to the casual reader it is evidently the work of a man who not only has had wide sea-going experience, but who also knows the fine points of zoology, bacteriology and pathology

There is hardly an emergency or mishap which could happen to a sailor at sea or on shore which has not been foreseen and treatment outlined. Its value to a

naval medical officer, whether in training or active service, cannot be overestimated. W. H. DONNELLY

**SURGICAL TREATMENT.** A Practical Treatise on the Therapy of Surgical Diseases for the Use of Practitioners and Students. By JAMES PETER WARBASE, M.D., formerly Attending Surgeon Methodist Episcopal Hospital, Brooklyn. Three large octavo volumes, and separate Desk Index Volume. Volume I, 947 pages, 699 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Per set (three volumes and the index volume), cloth, \$30.00 per set

The rapidly enlarging demands of surgery find an excellent demonstration in this portly volume of nearly one thousand pages, and with 699 illustrations. The volume is the first one of a series of three, all of which are to be devoted to Surgical Treatment alone. The author says that his object is to place in the hands of the surgeon the means for rendering help in every surgical condition under all circumstances, his aim being to make this information easily accessible and its application practical

This is a book which will appeal with especial interest to the physicians of Long Island, for it is the product of the experience and labor and industry of one of their own number. Long Island has not been very prolific of Surgical authors in the past. Of the number, the names of those who have made notable contributions to Medical and Surgical literature can be told off upon the fingers of two hands, and still leave some fingers to spare. When the names of Alexander Skene, Lewis and Paul Pelchier, George R. Fowler, Robert L. Dickinson, William Francis Campbell, Le Grand Kerr and Henry H. Morton have been set down, the number is complete. We are glad to add to this list that of Warbase whose careful work over so many years has been known to all his colleagues. He has laid us all under obligations at the present time by bringing out a book so full and elaborate, in which he has indicated his judgment as to the value of the infinite number of surgical procedures which the last thirty years has crowded upon the attention of the Surgical world

The illustrations which are very numerous are of the kind which really illustrate, not merely embellish. Take the series of cuts which illustrate the subject of lumbar puncture, pages 156 to 159, or the treatment of infected wounds, pages 238 to 246, and one will appreciate the value of good illustrations

The book naturally begins with a statement of the general principles of surgical treatment and a discussion of surgical materials, then after a chapter on anesthesia, he proceeds to the consideration of wounds and their complications, and then proceeds to the general body tissues

In the chapter devoted to the blood and blood vessels, a full consideration of the various methods of transfusion is given. At the close of the discussion he records his personal opinion that, the most simple, useful and effective method of transfusion is the citrate method

A brief chapter devoted to the lymphatic system precedes those upon the diseases of bones which in their various phases, including fractures and dislocations, comprise a very considerable portion of this volume

In the remainder of the volume the muscles, the skin and the nerves receive attention. A full index closes the volume

The author's style is clear, his descriptions are exact and brief, his judgments are in general to be relied upon, and disclose the results of a naturally critical, judicial temperament brought to bear upon surgical problems, to the study of which large opportunity and long experience add weight to the final judgment

L. S. P.

**DISEASES OF THE HEART, THEIR DIAGNOSIS PROGNOSIS AND TREATMENT BY MODERN METHODS With a Chapter on the Electro Cardiograph** By FREDERICK W PRICE M.D., F.R.S (Edin.), Physician Great Northern Central Hosp., London London Henry Frowde Hodder & Stoughton Oxford University Press Warwick Square, E C 35 W 32d St N Y City 1918 Price \$7.50

In his preface Dr Price announces 'The object of this book is to present in as concise a form as possible information which will be of service in the diagnosis, prognosis and treatment of diseases of the heart by modern methods. I have dealt with the subject from the point of view of the clinician and have carefully avoided matter of merely theoretical interest. This has been well accomplished in a small concise and yet complete volume that covers adequately the entire field of disease of the heart as developed by Mackenzie and his school and the other modern writers on the subject to whom due acknowledgment is made. Anatomy and physiology, nervous control and topography are concisely considered. The authors presentation of that important section upon murmurs their identification and interpretation is particularly sound and clear. Adequate sections are provided covering the subject of cardiography and describing both the polygraph and the electrocardiograph with adequate illustrations. One may fairly criticise this section not only in this but in other works on the heart, as somewhat incomplete inasmuch as the author states his preference for the Mackenzie Polygraph and dismisses the Jaquet instrument with a brief mention. As the tracings made by these two instruments vary considerably in their gross appearance it would be convenient to describe in some detail the interpretation of the curves made by both instruments. This however is a point which does not detract from the real value of Dr Price's work, which may be taken to cover adequately the field in which he is recognized as a master.

H G W

**GYNECOLOGY** By WILLIAM P GRAVES M.D. Professor Gynecology Harvard Medical School Second Edition thoroughly revised Octavo volume 883 pages 490 original illustrations 100 in colors Philadelphia and London W B Saunders Company, 1918 Cloth \$7.75 net

This text book beautifully illustrated and largely so by the artist author is a second edition of his first success brought well up to date. The chief impression gained from it is that it is from the pen of a deep student of gynecology. While we know Graves both for his researches and his brilliant operating we can't picture him from this book as a forceful clinical teacher.

He has logically divided the subject into three parts which will be reviewed in order.

Part I deals with physiology and the relationship of gynecology to the general organism and here we appreciate that we are at the feet of the master. While Graves has relieved operative dexterity and speed, we think of him primarily for his studies in the physiology of the pelvic organs and the interrelation of the organs of internal secretion. The ideas of sexuality are founded almost absolutely on Freud's philosophy and present a new concept of these characteristics.

Part II is gynecology *per se*. The author approaches it in an orderly if not a perfectly conclusive and inclusive manner. For example Salpingitis is dealt with at some length under Gonorrhea and touched upon under Tuberculosis but no other reference to it is made. Metritis is given only a few lines relegating it to the realm of obstetrics. Genital Syphilis is treated as briefly. Non surgical

treatment is not neglected but is treated logically as exemplified in the section on 'Dysmenorrhea' and also the one on the use of radium in non malignant diseases. An unusual section is that on General Symptomatology in Gynecology, grouping leucorrhea abnormalities of menstruation and pain in fourteen pages. For a general practitioners guide this is not sufficient amplification but for a specialists book it does very well.

Part III is purely of operations and there is no time lost on general surgical principles asepis anesthesia etc. His pictorial description of Baker's method of tracheloplasty and Schroeder's operation for extirpation of the endocervix shows much more distinction than there is in practice. For cystocele the authors method does not mention any fascial bridge but there is a bare reference to the fascia in the description of Clark's technic. The prime factor in any hernia, and this is one is the fascial suture and this is not emphasized sufficiently. The description of the Webster-Baldy operation for retroversion would be much more complete if there were added the suture of Polak between the uterovarian ligament and the loop of the round ligament placed with the latter under tension toward the mid line thereby relieving the circulation of and lifting up the ovaries. For ante flexion his illustration of the Dudley operation is the most visualizing yet seen but his suggestion of laparotomy with suspension by a pull from above is founded on good simple mechanics. In salpingectomy no description is given of the Norris method of removing the tube to particularly preserve the ovarian blood supply founded on Sampson's studies of ovarian circulation. Technic always offers a hard problem for a critique. Graves has grouped his methods in one chapter an admirable arrangement. Many of us may differ from him in detail for instance, as to his heavy use of cathartics pre and post operative but we must say that system dominates it all and on system success depends.

E B

## Deaths

JOSEPH BIDLEMAN BISSELL, M.D. New York City, died December 2 1918

JAMES STEWART DOUBLEDAY, M.D. New York City, died November 1918

CLARENCE SANFORD FAULKNER, M.D. Elizabethtown, died October 17 1918

JAMES S FORD, M.D. Loomis, died November 21 1918

JOHN G HOECHL, M.D. Buffalo, died October 5 1918

FRANK HENRY KNIGHT, M.D. Brooklyn, died October 28 1918

HENRY T KURTZ, M.D. Highland Falls, died October 15 1918

WARREN H LOOMIS, M.D. Lockport, died October 1918

JOSEPH S MARTIN, M.D. Binghamton, died October, 23 1918

THEODORE F MEAD, M.D., New York City, died October 30 1918

STEPHEN J H REID, M.D. Fultonville, died October 8 1918

VICTOR M RICE, M.D. Batavia, died October 13 1918

HARRY M SCHALL, M.D. Rochester, died October 9, 1918

ROBERT H SCOTT, M.D. Brooklyn, died October 15, 1918

GEORGE C WANKEL, M.D. Utica, died October 15 1918

GARDNER B YOUNG, M.D. Geneva, died October 1 1918

# INDEX

NOTE—Original articles are indexed in *italics*. Other abbreviations are as follows Editorials (E), Book Reviews (B)

	PAGE		PAGE
Aaron, Diseases of the Digestive Organs (B)	341	Buck, Growth of Medicine from Earliest Times (B)	128
<i>Abortion and Its Treatment</i>	196	Bulkley, Cause and Treatment of Cancer (B)	85
<i>Adenitis, Cervical, Nose and Throat on</i>	95	Burns and Their Treatment, including Dermatitis from High Explosives (B)	386
— — — — — <i>Indications for removal of Enlarged lymph glands</i>	109	Cabot, Differential Diagnosis (B)	342
— — — — — <i>Lymph Due to Infection in the Teeth</i>	103	— — — — — Modern Urology (B)	255
— — — — — <i>Lymph Nodes, Differential Diagnosis of Enlargement of</i>	91	Caille, Post-Graduate Medicine (B)	253
— — — — — <i>Roentgentherapy in</i>	99	Cancer, Cause and Treatment (B)	85
Ager, Louis Curtis	330	— — — — — <i>of the Larynx</i>	363
Albany (E)	129	— — — — — Notes on Causation of (B)	256
— — — — — Article on	200	<i>Carcinoma of the Bladder, Surgery vs Radium in Treatment of</i>	436
Alger, Ellice Murdoch	487	— — — — — <i>in the Duodenum and Incidence of Peptic Ulcer</i>	433
Alimentary Canal, Roentgen Diagnosis of Diseases of (B)	85	— — — — — <i>Intra-Laryngeal</i>	360
Allen, Local and Regional Anesthesia including Analgesia (B)	386	— — — — — <i>of the Stomach and Chronic Gastric Ulcer</i>	427
Amputation Stumps (B)	424	<i>Cardiac Strength and the Importance of Conserving Energy During and Following Operations</i>	380
Anatomy, Handbook of (B)	90	Cardiology, Clinical (B)	206
Anders, Text-Book of the Practice of Medicine (B)	253	Carlton, Seriousness of Venereal Disease (B)	462
Anesthesia, Local and Regional, including Analgesia (B)	386	Carman, Roentgen Diagnosis of Diseases of the Alimentary Canal (B)	85
Annual Meeting (E)	47	Carroll, Mastery of Nervousness (B)	207
— — — — — House of Delegates	244	Carson, Control of Hunger in Health and Disease (B)	126
— — — — — Preliminary Program & Scientific Sessions	72, 159	Carter, Nutrition and Clinical Dietetics (B)	44
Antiseptics, Handbook on (B)	208	Cataract, Senile, Traumatic and Congenital (B)	207
Army Medical Officers, Notes for (B)	86	Cecil, Russell L	414
Arrowsmith, Hubert	368	Cerebellar Abscess, Etiology, Pathology, Treatment (B)	88
Ashton, Text-Book on Gynecology (B)	86	<i>Cesarean Section, Is It Justifiable in Eclampsia and Placenta Previa</i>	389
<i>Atony, Intestinal, in Children</i>	1	Charles-Robert, La Suspension dans le Traitement des Fractures (B)	499
<i>Baby That Cannot Take Milk</i>	141	Chekhov, Nine Humorous Tales (B)	386
Bacon, Manual of Otology (B)	462	Chemical Pathology (B)	342
Bacteriology, Applied (B)	387	Chest, Diseases of and Principles of Physical Diagnosis (B)	90
Banks, Ammunition for Final Drive on Booze (B)	126	Child, Health-Care of the Growing (B)	388
Barringer, Benjamin S	436	Childbirth, Painless, Eutocia and Nitrous Oxygen Analgesia (B)	127
Basch, Seymour	427	<i>Children, Atony in</i>	1
Basis of Symptoms (B)	256	— — — — — <i>Incanuria in</i>	22
Bassler, Diseases of Stomach and Upper Alimentary Canal (B)	128	— — — — — <i>Laryngotomy in</i>	26
Bastedo, Materia Medica, Pharmacology and Therapeutics (B)	341	Clarke, T Wood	141
Beck, James M	209	Clinical Diagnosis by Means of Laboratory Methods (B)	300
Bergey, Principles of Hygiene (B)	341	— — — — — Medicine, Treatise on (B)	387
Bernheim, Blood Transfusion, Hemorrhage and Anemias (B)	341	Cohen, Martin	313
Besemer, Howard Burhans In Memoriam	128	Collic, Malinger and Feigned Sickness (B)	85
Bethea, Practical Materia Medica and Prescription Writing (B)	85	Constipation, Obstipation and Intestinal Stasis (B)	124
Blair, Botanic Drugs (B)	256	Constitution and By-Law Amendments	78
Blood Transfusion, Hemorrhage and Anemias (B)	341	Cornwall, Clinical Treatise on Diseases of the Heart (B)	42
Boehme, New Thought Healing Made Plain (B)	387	Cottis, George W	28
Bone Surgery with Special Reference to Treatment of Fractures (B)	298	Council Meetings	37, 294
Book Reviews 41, 85, 122, 163, 206, 252, 298, 339, 386, 423, 461, 499		County Medical Meetings (E)	425
Books Received 40, 84, 123, 163, 206, 252, 297, 339, 385, 423, 461, 499		County Societies, 38, 82, 121, 162, 205, 250, 295, 385, 460, 496	
Booze, Ammunition for Final Drive on (B)	126	Cragin, Practical Text-Book of Obstetrics (B)	89
Botanic Drugs (B)	256	Culbert, William Ledlie	465
<i>Breast, Benign Tumors of</i>	137	Cushing, Tumors of the Acoustics and the Syndrome of the Cerebellopontine Angle (B)	164
— — — — — <i>Feeding</i>	411	Cusling, Secretions of the Urine (B)	164
— — — — — <i>Surgical History and Anatomy of</i>	131	Dakan, Handbook on Antiseptics (B)	208
Brodhead George Livingston	389	Davi, Painless Childbirth (B)	127
Brown, Rules for Recovery from Pulmonary Tuberculosis (B)	89	Deaths 44, 90, 128, 166, 208, 256, 300, 342, 388, 424, 462, 501	
Browning, Applied Bacteriology (B)	387	Deaver, John Blair	137
Brubaker, Compend of Human Physiology (B)	300		
Bucholz, Manual of Therapeutic Exercise and Massage (B)	128		

	PAGE		PAGE
Delavan, D. Bryson	360	Good Health How to Get It and Keep It (B)	89
Delegates (E)	343	Goodwin Notes for Army Medical Officers (B)	86
Dementin Praecox Studies (B)	299	Gordiner Herman C	267
Dennett Roger Herbert	278	Gottlieb William S	155
Dercum Manual of Mental Diseases (B)	165	Graves, Modern Dietetics (B)	127
— Therapeutic Measures in Mental and Ner- vous Diseases (B)	43	— Gynecology (B)	501
Desfosses, La Suspension dans Le Traitement des Fractures (B)	499	Graves Disease Medical Treatment of	267
Diabetes Mellitus	191	Greene Medical Diagnosis (B)	41
— Study of the Urine in	193	Greenwood Military Ophthalmic Surgery (B)	123
Diabetic Manual for Doctors and Patients (B)	224	— Scopolamine Morphine Semi Narcosis During Labor (B)	342
Diabetes, New Method in (B)	88	Griffith J P Crozer	411
Dietetics, Modern (B)	127	Guerre, Commotions et Emotions de (B)	499
Differential Diagnosis (B)	342	Gunshot Wounds of the Humerus	353
Digestive Organs Diseases of the (B)	341	Gynecology Text Book on (B)	86
Digitalis Preparations	486	Hamilton Wheeler Conversion of (B)	255
Diphtheria in New York State	177	Harrison Diagnosis and Treatment of Venereal Diseases (B)	387
District Branches (E)	301	Hartzell, Thomas B	103
— Meetings for 1918	384	— Diseases of the Skin (B)	123
— Annual Meetings First	459	Haynes, Royal Storrs	91
— — — — — Third	384	Health Insurance Bill Hearing on	158
— — — — — Fourth	384	— Side Light on	199
— — — — — Fifth	385	Heart Clinical Treatise on Diseases of (B)	42
— — — — — Seventh	385	— Diagnoses, Prognoses Treatment of Diseases of (B)	501
— — — — — Eighth	339	— Irregularities of the	479
Doctor's Vacation (E)	257	Heffron John L	479
Dooley Marion Sylvester	486	Hinman Eugene L	15
Doty, How to Get and Keep Good Health (B)	89	Hirst Text Book of Obstetrics (B)	340
Dowd, Charles N	109	Holmes, Dementia Praecox Studies (B)	299
Draper Acute Poliomyelitis (B)	43	Huggins, Raleigh Russell	380
Dream Psychology (B)	208	— Care and Treatment of Amputation Stumps (B)	424
Duval War Wounds of the Lungs (B)	499	Human Physiology, Compend of (B)	300
Eclampsia, Is Cesarean Section Justifiable in	389	Humorous Tales (B)	386
— Conservative Treatment of	395	Hunger in Health and Disease Control of (B)	126
Edgar J Clifton	406	Hygiene Principles of (B)	341
Edwards Principles and Practice of Medicine (B)	388	— and Public Health (B)	208
Eggleston Essentials in Prescription Writing (B)	255	Ill, Edward J	399
Elsberg Surgical Diseases of the Spinal Cord and Its Membrane (B)	43	Incanuria in Children	22
Enema Splenic	28	Inexact Medical Writing (E)	463
Enlightening the Public on Medical Subjects (E)	45	Infancy and Childhood Treatment of Diseases of (B)	206
Eys, Epidemiology of Contagious Diseases of	313	— — — — — Diarrhæal Diseases of	317
Fibroid Tumors of the Uterus	399	Infant Feeding	6
Fischer Health Care of the Growing Child (B)	388	— — — — — with Dry Milk	278
— Treatment of Diseases of Infancy and Childhood (B)	206	— — — — — Practical	6
Fishberg Pulmonary Tuberculosis (B)	127	Infants Intestinal Intoxication in	324
Fisher Catarrh Semile Traumatic and Congen- ital (B)	207	Infantile Paralysis (B)	123
Fondus Oculi of Birds (B)	127	— — — — — Early History of	330
Food for the Sick (B)	85	— — — — — State Work Against (B)	163
Ford Details of Military Medical Administration (B)	252	Infection Immunity and Specific Therapy (B)	163
Fowler Russell Story	72	— — — — — and Resistance (B)	396
Fractures La Suspension dans le Traitement des (B)	499	Injured Immediate Care of (B)	252
Freeman Pediatrics for Medical Students (B)	207	Internal Secretions (B)	388
Friesner Etiology Pathology and Treatment of Cerebellum Abscess (B)	88	International Clinics (B)	166
Gallagher Charles Henry, In Memoriam	424	Intestinal Atony in Children	1
Gall Bladder Disease	72	— — — — — Intoxication in Infants	324
Gant Constipation Obstipation and Intestinal St- asis (B)	124	— — — — — Obstruction	219
Gaskell The Involuntary Nervous System (B)	300	— — — — — Stasis (B)	252
Gastric Ulcer and Carcinoma of the Stomach	427	— — — — — Chronic	375
Gry Typhoid Fever a Problem of Scientific Medi- cine (B)	298	Jack Harvey P	219
Geiger Modern Operative Bone Surgery (B)	298	Johnson J Roberts	6
Genito Urinary Surgery and Venereal Diseases (B)	42	Jones Isaac H	167
Gibson Charles Langdon	345	Joslin Diabetic Manual for Doctors and Patients (B)	421
Gley The Internal Secretions (B)	388	Keefer Military Hygiene and Sanitation (B)	462
Goetsch Emil	259	Kellogg New Method in Diabetes (B)	88
Goutte Surgical Treatment of	272	Keen Treatment of War Wounds (B)	423
Goler George W	113	Kurley The Practice of Pediatrics (B)	253
		Krapp Medical Ophthalmology (B)	123
		Kolmer Infection Immunity and Specific Therapy (B)	163
		Krehl The Basis of Symptoms (B)	256

	PAGE		PAGE
Laboratory Methods of the U S Army (B)	298	Medical Society of the State of New York	J. H. P.
<i>Labyrinth, Value of Routine Examination of</i>	167	Report of Committee on, to Consider Redistricting the District Branches	237
<i>Lactic Acid Cultures in Treatment of Difficult Feeding Cases</i>	13	Prize Essays	245
Lane-Clayton, Milk and Its Hygienic Relations (B)	165	District Branch Councilors	241
<i>Laryngoscopy in Chronic Post-Diphtheretic Laryngo-Tracheal Stenosis</i>	170	Medicine, Its Growth from Earliest Times (B)	128
<i>Laryngotomy in Children</i>	26	Diagnosis for Students and Practitioners (B)	41
<i>Larynx, Cancer of the</i>	363	Text-Book of the Practice of (B)	253
— <i>New Growths Treated by Internal Surgical Methods</i>	368	Treatise on the Principles and Practice of (B)	388
Leeston and Allied Substances (B)	342	Mental Diseases, Clinical Manual of (B)	165
Legislature, Bills Introduced Into	117	Hygiene (B)	124
Members of, 1918	34	Metabolism, Physiological and Pathological Chemistry of (B)	88
Owen Bill	117	<i>Milk, Dry, in Infant Feeding</i>	278
Leri, Commotions et Emotions de Guerre (B)	499	— and Its Hygienic Relations (B)	165
Lessons from the Enemy (B)	254	— Problem in Sanitation (B)	125
Lichty, John Alden	433	Military Hygiene and Sanitation (B)	462
Lloyd, Samuel	181	Medical Administration, Details of (B)	252
Locke, Conversion of Hamilton Wheeler (B)	255	Notes	118, 157
Locomotor Ataxia (B)	123	Ophthalmic Surgery (B)	123
Losee, Joseph Rankin	333	Orthopedic Surgery (B)	253
Lovett, Treatise on Infantile Paralysis (B)	123	Surgery (B)	254
Lowsley, Oswald Swinney	184	Surgery of the Zone of the Advance (B)	499
<i>Lung and Pleura, Primary Malignant Neoplasms of</i>	472	Moorhead, Traumatic Surgery (B)	44
Lusk Elements of the Science of Nutrition (B)	90	Morris, The Way Out of War With Notes on Its Biology (B)	299
Lynah, Henry Lowndes	170	Morrison, Bipp Treatment of War Wounds (B)	424
McCaw, James Francis	26	Morrow, Immediate Care of the Injured (B)	252
McCombe, Medical Service at the Front	298	Musser, Handbook on Practical Treatment (B)	126
McCoy, John	363	National Formulary (B)	207
McCrudden, General Principles of Therapeutics (B)	208	Naval Hygiene (B)	500
McDill, Lessons from the Enemy (B)	254	<i>Nephropexy</i>	181
McKenzie, Reclaiming the Maimed (B)	423	Nervo-Muscular Mechanism of the Eyes (B)	128
McNutt, Modern Milk Problem in Sanitation (B)	125	Nervous and Mental Diseases (B)	43
McPherson, Ross	395	System, The Involuntary (B)	300
Maclean, Leeston and Allied Substances (B)	342	Nervousness, Mastery of (B)	207
Macleod, Burns and Their Treatment (B)	386	Nesbitt, Clinical Cardiology (B)	206
Maimed, Reclaiming the (B)	423	Neurological Bulletin (B)	125
<i>Malingering of the Ear</i>	492	Neustaedter, Marcus	328
Ocular	487	New Thought Healing Made Plain (B)	387
and Feigned Sickness (B)	85	Nicholson, Samuel Timothy, Jr	63
Maloney, Locomotor Ataxia (B)	123	Nicoll, Dream Psychology (B)	208
Mamon, A Surgeon in Arms (B)	340	Matthias, Jr	455
Martin, Genito-Urinary Surgery and Venereal Diseases (B)	42	Nissen, Practical Massage and Corrective Exercises (B)	90
Martin, Walton	354	Noguchi, Hideyo	313
Massage and Corrective Exercises (B)	90	<i>Noima</i>	15
Materia-Medica, Pharmacology and Therapeutics (B)	341	Nonne, Syphilis and the Nervous System (B)	86
Prescription Writing (B)	45	Norris, Diseases of the Child and Principles of Physiological Diagnosis (B)	90
Mayo Clinic, Collected Papers of	42, 461	Nursing, Principles of Surgical (B)	340
Meader, Fred M	177	Nutrition and Clinical Dietetics (B)	44
Mechanism and Character Formation (B)	87	Elements of the Science of (B)	90
Medical Clinics of North America (B)	86, 166, 299, 339, 461	Oberkacher, Oscar J	290
Service at the Front (B)	298	Obstetrics, Normal and Operative (B)	87
Medical Society of the State of New York		Operative	32
Annual Meeting (E)	47	Practical Text-Book of (B)	89
112th	244	Text-Book of (B)	87, 340
Meeting of the House of Delegates	244	<i>Ophthalmic Changes in Tabes and Paraces with Special Reference to Cerebrospinal Syphilis</i>	304
Adjourned Meeting, House of Delegates	249	Ophthalmology, American Journal of (B)	125
Organization	36	Medical (B)	6
Scientific Sessions Preliminary Program	79, 159	Orthopedic Surgery, Military (B)	253
Address of President	217	Treatise on (B)	41
Report of Secretary	223	<i>Ostoma, Multiple of the Nasal Accessory Sinuses Complicated by Syphilis</i>	465
Council	224	Otology, Manual of (B)	462
Committee on Publication	224	Packard, Maurice	472
Committee on Arrangements	225	Parmenter, Frederick James	290
Committee on Scientific Work	225	Pearce, The Spleen and Anemia (B)	340
Committee on Public Health and Medical Education	226	Pediatrics for Medical Students (B)	207
Treasurer	227	Practice of (B)	253
Counsel	237	Penhallow, Military Surgery (B)	254
Committee on Legislation	230	<i>Peptic Ulcer and Carcinoma in the Duodenum</i>	433
Medical Economics	231		
Medical Research	237		

		PAGE
Philer, George E.	199	
Phiology Laboratory Guide in (B)	165	
Phiology Annual of (B)	165	
Phiology and Therapeutics (B)	124	
Physical Chemistry of the Proteins (B)	387	
Physician and the Public	418	
Pilcher Fracture of the Lower Extremity of the		
Radius (B)	125	
Pneumonia at Camp Upton Serum Treatment of	414	
Pocket Formulary (B)	300	
Polio-myelitis, Acute (B)	43	
Polio-myelitis, Acute (B) Complete Fixation with a		
Specific Antigen	328	
Porter Elements of Hygiene and Public Health (B)	208	
Porter Shock at the Front (B)	255	
Posay William Campbell	48	
Post Graduate Medicine (B)	253	
Potter Irving W.	32	
Practical Treatment by Many Writers (B)	126	
Pregnancy Chemical Examination of the Blood and		
Urine in	333	
Prescription Writing (B)	257	
President State Society Annual Address	217	
Price Diagnosis Prognosis and Treatment of Dis-		
eases of the Heart (B)	501	
Prize Essays Committee Report	245	
Prize Essays Subjects Suggested for	422	
Pryor Naval Hygiene (B)	500	
Psychology of the War	209	
Pulmonary Tuberculosis (B)	87 127	
Radius, Fracture of the Lower Extremity or Base		
of (B)	125	
Richards Bradford H.	52	
Robertson Physical Chemistry of the Proteins (B)	387	
Robinson John Alexander	492	
Rongy Abraham J.	196	
Rulison Ray H.	443	
Russell Notes on Causation of Cancer (B)	256	
Sanitation for Medical Officers (B)	41	
Surgery, Nerve Muscular Mechanism of the Eyes		
(B)	128	
Schloss Oscar M.	324	
Schoenberg Mark J.	59	
Sectum Officers for 1918	252	
Seluyler William J.	22	
Scopolamine Morphine Semi Narcosis During La-		
bor (B)	342	
Shaw Henry L. K.	18	
Shears Obstetrics Normal and Operative (B)	87	
Shell Shock and Its Lessons (B)	42	
Shock at the Front (B)	255	
Simon Clinical Diagnosis by Laboratory Methods		
(B)	300	
Skin Diseases of the (B)	123	
Sloan Robert	317	
Sluss Emergency Surgery (B)	45	
Smith Shell Shock and Its Lessons (B)	42	
— Stephen	439 458	
Snell Albert C.	284	
Soliman Laboratory Guide in Pharmacology (B)	165	
Spinal Cord and Its Membrane Surgical Diseases		
of (B)	43	
Spleen and Anemia (B)	340	
Splints and Appliances for U. S. Medical Depart-		
ment (B)	164 298	
Still Birth Some Causes of		
Still Diagnosis of Treatment of Tropical Diseases		
(B)	41	
Stomach and Upper Alimentary Canal (B)	128	
Strouse Food for the Sick (B)	85	
Surgeon in Arms (B)	340	
Surgery Emergency (B)	85	
— Military of the Zone of the Advance (B)	499	
Surgical Clinics of Chicago (B)	164 298	
— Treatment (B)	500	
Syme Parker	131	
Syphilis Is It or Is It Not	155	
— of the Brain and Cord Treatment by Sal-		
varson and Mercurofused Serum	63	
Syphilis Cerebrospinal and Ophthalmic Changes in		
Tabes and Paresis	304	
— of the Ear	52	
— of the Eye	48	
— of the Optic Pathway Intracranial Treat-		
ment	59	
— and the Nervous System (B)	86	
— and Public Health (B)	299	
Tabes and Paresis Ophthalmic Changes in		
Special Reference to Cerebrospinal Syphilis	304	
Tarnowski Military Surgery of the Zone of the		
Advance (B)	499	
Therapeutic Exercise and Massage (B)	43	
— Introduction to General Principles (B)	208	
Thomson Alice Nicol	451	
— Treatise on Clinical Medicine (B)	387	
Thornton Pocket Formulary (B)	300	
Thyroid Disorders Newer Methods in Their Diag-		
nosis	259	
Traumatic Surgery (B)	44	
Tropical Diseases Diagnosis and Treatment (B)	41	
Tuberculosis Pulmonary (B)	89 127	
Tumors of the Nervous Acoustics and the Syn-		
drome of the Cerebellopontile Angle (B)	164	
Turck Fenton Benedict	1	
Typhoid fever A Problem of Scientific Medicine		
(B)	298	
Typhus Fever Epidemic in Rumona	443	
Uremia in Diabetes Mellitus	193	
— Secretion of the (B)	164	
Urology Modern (B)	255	
Urological Service of the Buffalo General Hospital	290	
— Surgery Complications and Incorrect Di-		
agnosis	184	
Uterus Fibroid Tumors of	399	
Under Bogert Frank	13	
Vedder Sanitation for Medical Officers (B)	41	
— Syphilis and Public Health (B)	299	
Veneral Disease Control of		
— Diagnosis and Treatment of (B)	387	
— Recent Factors in Control of in		
New York State	455	
— Seriousness of (B)	462	
Vital Economics as Applied to N. Y. State Work-		
man's Compensation Law	284	
Von Furlth Physiological and Pathological Chem-		
istry (B)	88	
War Effects Upon Health of Military and Civil		
Population	113	
— Psychology of the	209	
— A School of Surgery	439	
— Surgery American Addresses on (B)	164	
— Wounds Bup Treatment of (B)	424	
— Control of Inspection of	354	
— of the Lungs (B)	499	
— Surgical Treatment of	345	
— Treatment of (B)	423	
— The Way Out with Notes on Its Binlogy (B)	299	
Warlike Surgical Treatment (B)	500	
Warlike Principles of Surgical Nursing (B)	340	
Webb Charles Wallace	272	
Wechsler Israel Spiner	304	
Wells Chemical Pathology (B)	342	
White Mechanism and Character Formation (B)	87	
— Mental Hygiene (B)	124	
Whitman Treatise on Orthopedic Surgery (B)	41	
Whooping Cough Treatment of	18	
Williams John Ralston	101	
— Text Book of Obstetrics (B)	87	
Wilson George Ewart	353	
Winter Henry Lyle	418	
Wood Tondus Oculi of Birds (B)	12	
Wood George Bacon	95	
Wood Pharmacology and Therapeutics (B)	124	
Yocombs Frank Clark	375	
Younge Harold Hank on Anatomy (B)	80	
Zinsser Infection and Resistance (B)	386	

# ORIGINAL ARTICLES

	PAGE
LOUIS CURTIS AGER—Early History of Infantile Paralysis	330
ELLICE MURDOCH ALGER—Ocular Malingering	487
HUBERT ARROWSMITH—Treatment of Growths of the Larynx by Internal Surgical Methods	368
BLNJAMIN S BARRINGER—Surgery vs Radium in Treatment of Carcinoma of the Bladder	427
SLYMOUR BASCH—Chronic Gastric Ulcer and Carcinoma of the Stomach	427
JAMES M BECK—Psychology of the War	209
GEORGE LIVINGSTON BRODHEAD—Cesarian Section in Eclampsia and Placenta Previa	389
RUSSELL LA FAYETTE CECIL—Classification and Serum Treatment of Pneumonia at Camp Upton	414
T WOOD CLARKE—The Baby That Cannot Take Milk	141
MARTIN COHEN—Notes on the Epidemiology of Contagious Diseases of the Eye	313
GEORGE W COTTIS—The Surgery of Splenic Anemia	28
WILLIAM LEDLIE CULBERT—Multiple Osteoma of Nasal Accessory Sinuses, Complicated by Syphilis	465
JOHN BLAIR DEAVER—Benign Tumors of the Breast	137
D BRYSON DELAVAN—Early Diagnosis of Intra-Laryngeal Carcinoma	360
ROGER HERBERT DENNETT—Dry Milk in Infant Feeding	278
CHARLES N DOWD—Indications for Removal of Enlarged Cervical Lymph Nodes	109
JAMES CLIFTON EDGAR—Some Causes of Still Birth	406
M S DOOLEY—Notes on the Assay of Digitalis Preparations	486
RUSSELL STORY FOWLER—Gall Bladder Disease	72
CHARLES LANGDON GIBSON—Surgical Treatment of War Wounds	345
EMIL GOETSCH—Newer Methods in the Diagnosis of Thyroid Disorders, Clinical and Pathological	259
GEORGE W GOLER—War, Its Effects Upon the Health of the Military and Civil Population	113
HERMON C GORDINIER—Medical Treatment of Graves' Disease	267
WILLIAM S GOTTHEIL—Is It Syphilis or Not?	155
J P CROZER GRIFFITH—The Establishment and Maintenance of Breast Feeding	411
THOMAS B HARTZELL—Cervical Lymph Adenitis Due to Infection Arising In and About the Teeth	103
ROYAL STORRS HAYNES—The Differential Diagnosis of Enlargements of the Cervical Lymph Nodes	91
JOHN L HEFFRON—Some Irregularities of the Heart and Their Treatment	479
EUGENE E HINMAN—Noma	15
RALEIGH R HUGGINS—Cardiac Strength and Importance of Conserving Energy in Operations	380
EDWARD JOSEPH ILL—Observation on Fibroid Tumors of the Uterus	399
HARVEY PETER JACK—Intestinal Obstruction	219
J ROBERTS JOHNSON—Practical Infant Feeding	6
ISAAC H JONES—Value of Routine Examination of the Labyrinth	167
ALEXANDER LAMBERT—President's Address	217
JOHN ALDEN LICHTY—The Incidence of Peptic Ulcer and Carcinoma in the Duodenum	433
SAMUEL LLOYD—Floating Kidney, Nephropexy	181
JOSEPH RANKIN LOSEE—Some Observations on the Chemical Examination of the Blood and Urine in Normal Pregnancy and in Toxemia of Pregnancy	333
OSWALD SWINNEY LOWSLEY—Some Complications and Incorrect Diagnoses in Urological Surgery	184
HENRY LOWNDES LYNNAH—Direct Laryngoscopy in the Treatment of Chronic Post-Diphtheritic Laryngo-Tracheal Stenosis	170
JAMES FRANCIS McCAW—Laryngotomy in Children	26
JOHN MCCOY—Surgical Treatment of Cancer of the Larynx, with Report of a Case	363
ROSS McPHERSON—Conservative Treatment of Eclampsia	395
WALTON MARTIN—The Control of Infection in War Wounds	354
FRED M MEADER—Diphtheria in New York State	177
MARCUS NEUSTAEDTER—Complement Fixation with a Specific Antigen in Acute Poliomyelitis	328
SAMUEL TIMOTHY NICHOLSON, JR—The Treatment of Syphilis of the Brain and Cord by Subdural Injections of Salvarsanized-Mercurialized Serum	63
MATTHIAS NICOLL, JR—Factors in Control of Venereal Diseases, New York State	455
HIDEYO NOGUCHI—Notes on the Epidemiology of Contagious Diseases of the Eye	313
OSCAR I OBERKIRCHER—Report of the Urologic Service at the Buffalo General Hospital	290
MAURICE PACKARD—Primary Malignant Neoplasms of the Lung and Pleura	472
FREDERICK JAMES PARMENTER—Report of the Urologic Service at the Buffalo General Hospital	290
GEORGE E PFAHLER—Roentgentherapy in Cervical Adenitis	99
WILLIAM CAMPBELL POSEY—Syphilis of the Eye	48
IRVING W POTTER—Operative Obstetrics	32
BRADFORD A RICHARDS—Syphilis of the Ear	52
JOHN HAROLD RICHARDS—A Study of the Urine in Diabetes Mellitus with Special Reference to the Relation of the Urinary Acetone Bodies to the Ammonia Excretion	193
JOHN ALEXANDER ROBINSON—Malingering from the Standpoint of the Ear	492
ABRAHAM J RONGY—Abortion and Its Treatment	196
RAY H RULISON—Notes on the Epidemic of Typhus Fever in Rumania	443
OSCAR M SCHLOSS—Intestinal Intoxication in Infants	324
MARK J SCHOENBERG—Intracranial Treatment of Syphilis of Optic Pathways and Optic Atrophies	59
WILLIAM I SCHUYLLER—Indicanuria in Children	22
HENRY LARNED KEITH SHAW—The Treatment of Whooping Cough	18
ROBERT SLOAN—Diarrhoeal Diseases of Infancy	317
STEPHEN SMITH—War a School of Surgery	439
ALBERT C SNEEL—Some Problems in Visual Economics as Applied to the New York State Workmen's Compensation Law	284
PARKER SYMS—Surgical Histology and Anatomy of the Breast	131
ALEC NICOL THOMSON—The Problem of Venereal Disease Control	451
FENTON BENEDICT TURCK—The Mechanism of Intestinal Atony in Children	1
FRANK VANDER BOGERT—Lactic Acid Cultures in the Treatment of Difficult Feeding Cases	13
CHARLES WALLACE WEBB—Surgical Treatment of Goitre	277
ISRAEL SPANER WECHSLER—Ophthalmic Changes in Tabes and Paralysis	304
JOHN RALSTON WILLIAMS—The Common Problems in Diabetes Mellitus	191
GEORGE EWART WILSON—The Treatment of Gunshot Wounds of the Humerus	353
HENRY LYLE WINTER—The Physician and the Public	418
GEORGE BACON WOOD—The Nose and Throat in Cervical Adenitis	95
FRANK CLARK YEOMANS—Conservative Surgery of Chronic Intestinal Stasis	375

